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CANADA

REPORT

OF THE

MINISTER OF PUBLIC WORKS

ON THE

WORKS UNDER HIS CONTROL

FOR THE

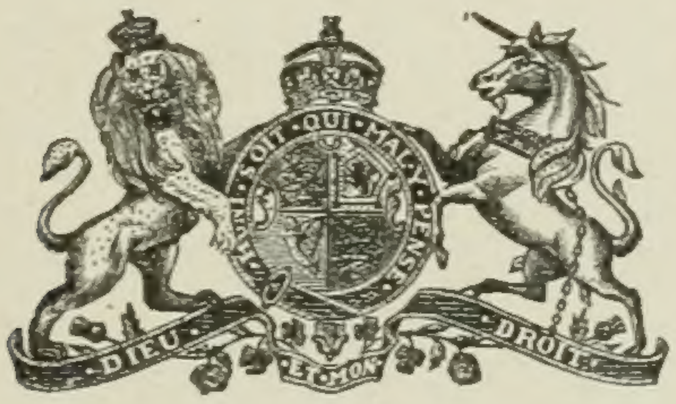
FISCAL YEAR ENDED MARCH 31

1912

VOLUME I

Submitted in accordance with the Provisions of Chapter 39, Section 34, of the Revised Statutes of Canada.

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OTTAWA
PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1912

[No. 19—1913.]

To His Royal Highness, Field Marshal, Prince Arthur William Patrick Albert, Duke of Connaught and Strathearn, K.G., K.T., K.P., etc., etc., Governor General and Commander-in-Chief of the Dominion of Canada.

I have the honour to lay before Your Royal Highness the Report of the Department of Public Works of Canada, for the fiscal year ended March 31, 1912.

I have the honour to be,
Sir,
Your Royal Highness's most obedient servant,

ROBERT ROGERS,
Minister of Public Works.

OTTAWA, November 7, 1912.

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Grosse Isle, P.Q., quarantine station		9-26	15	143			
" telegraphs		36			12-89		
Grouard, Alta, lands office		15-45					
" " dredging				243-358			
Grove Point, N.S.				29			
Guelph, Ont., public building.			12-42	26			
Gull Lake, Sask., immigration building		15-45					
Guysboro, N.S., public building		7					
H.							
Habitant river, N S		18					
Haggerties, P.E.I		21		82			
Haileybury, Ont		30		200			
Halifax, N.S., public building		7	4				
Halls Harbour, N.S		18		30			
Hamilton, Ont		30		200			
" public buildings		12-42	27				
Hampton, N.S.		18		30			
" N.B		24		114			
Hampstead, N.B.		23		113			
Haney, B.C.				251			
Hanover, Ont., post office		12					
Harbours and rivers generally	6	34					
Harbour au Bouche, N.S		18					
Hardy Bay, B.C		33		251			
Harrington, P.Q		26					
Harriston, Ont., public building		12	27				
Harrison river, B.C		33		251			
Harrup, B.C.		33		252			
Hartland, N.B., post office		8	10				
Harvey Bank, N.B		23		100			
Hatfield Point, N.B		23		113			
Havre de la Fonderie, P.Q		26					
Hawkesbury, Ont., public building		12-42					
" "		30		201			
" " bridge		35		395			
Heating public buildings		39					
Herbert, Alta, immign. building		45					
Herring Cove, N.S		18		31			
Herring Rocks, N.S		19					
Higgins Shore, P.E.I		21		82			
High River, Alta., armoury		15					
Hillsborough, N.B., post office		8	11				
Hochelaga, Q., public building		9-40					
Hollyburn, B.C.		33		252			
Hopewell Cape, N.B.		23		101			
Hudson, P.Q		26		143			
Hull, P.Q., wharf		26		144			
" public building		9-40					
Humboldt, Sask., public building		15-45	52				
Huntsville, Ont		30		202			

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Iberville, P.Q.		29					
" public building		9–40	16				
Indian Brook, N.S.		19		31			
Indian Ferry, N.B.		24		116			
Indian Head, Sask., expl. farm		15–45					
Ingersoll, Ont., public building		12–42	27				
International waterways commission		37					
Inverness, N.S		19		32			
" public building		7					
Iona, N.S.				32			
Iron Bound Cove, N.B		24		113			
Iroquois River, N.B.		24		116			
Irvine, Alta., immign. bldg.		15					
Isle Bizard, P.Q.				173			
Isle Bonaventure, P.Q.		26					
Isle Aux Nois, P.Q		26					
Isle Perrot, P.Q.		26		144–340			
Isle Verte, P.Q		26		145			
J							
Jamesville, N.S.		19		33			
Jenkin's, N.B		24		117			
Jennette's Creek, Ont.		30		202-355			
Jersey Cove, P.Q.		26					
Johnston's Cove, N.B		23					
Johnson's Bend, Ont		30					
Joliette, P.Q., pub. bldg's		9-40	16				
Jones Harbour, N.S		19		33			
Judique, N.S		19					
K							
Kakanee, B.C		33		252			
Kaministiquia River, Ont				195			
Kamloops, B. C., public building		16–46	58				
Kars, N.B		24					
Kelly's Cove, N.S		19					
Kempt Head, N.S		19					
Kemptville, Ont., post office		12					
Kerr-Robert, immign. bldg.		15–45					
Kennebecasis river, N.B.				113			
Kenora, Ont., public building		12–42	27				
" " wharf.				202			
Kentville, N.S., public building		7	5				
Kettle Falls, Ont				203			
Kier's Shore, P.E.I.				83			
Kincardine, Ont.		30		203–351			
" " public building		12-42					
Kincolith, B.C.		33					
Kingsport, N.S		19		33			
Kingston, Ont.		30					
" " dry dock		30					
" " public buildings		12–42					
Kingston Creek, N.B		23		113			
Kingsville, Ont		30		204			
" " postoffice		12					
Kinsella, immign. bldg.		45					
Kippewa dam, telegraphs		37			90		
Knowlton, P.Q., public building		9–40					
Knowlton Landing, P.Q		26		145			
Kokanee, B.C.		33		252			
Kootenay Lakes, B.C.		33		252			
Kouchibougouac, N.B.		23		101			
Kraut Point, N.S.		19					

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Lachine, P.Q., pub. bld'g		9-40					
Lachute, " " "		9-40	16				
Lacolle, P.Q.		26		145			
Lacombe, N.W.T., experimental farm		15-45					
Ladysmith, B.C., public building		16-46					
" " " wharf				253			
La Have river, N.S.		19					
Lake Ainslie, N.S.		19		34			
Lake Aylmer, P.Q.		26		182			
Lake Massawippi, P.Q.		26					
Lake Nipissing, Ont.		30		204			
Lake St. John, P.Q				146			
Lake Timiskaming, Ont.		34		205			
Lake Winnipeg, Man		32					
Lakeport, Ont.		30		205			
Lameque, N.B.		23		101			
Lands leased			63				28
Laprairie, P.Q.		26		146			
" " public building		9-40					
L'Ardoise, N.S.		19					
Largest docks and vessels							35
Larry's River, N.S.		19		34-270			
La Salette, P.Q.				140			
L'Assomption, P.Q., public building		9-40	16				
" " " wharf		26		147			
Last Mountain Lake, Sask.		33		246			
Laurentide, P.Q., Post Office		9					
Laurin, P.Q.		26		147			
Lawlors Point, N.B.		23					
Lawlors Shore, N.B.		23		108-299			
Leamington, Ont, wharf		31					
" " public building		12-42					
Leases			63				
Leitches Creek, N.S.		19		34			28
Lennox Island, P.E.I.		21		83			
Leonards Cove, N.S.		19		35			
Leonardville, N.B		23		102-295			
Les Bergerronnes, P.Q.		26		147			
Les Eboulements, P.Q.		26		148			
Lesser Slave river		33		244-358			
L'Etang, N.B.		23					
Lethbridge, Alta, public buildings		15-45					
Levesque, N.B.		24		117			
Levis, P.Q, harbour		26		148			
" graving dock		26		381		5-17	
" public building		9-40	16				
Lewis-Yukon rivers		34					
Lighting, public buildings		39					
Lindsay, Ont., public building		12-42	28				
Lions Head, Ont		31		205			
Liscombe, N.S.		19-20		35			
Listers rapids, Man		32		240			
Listowel, Ont		12		27			
Litchfield, N.S.		19		35			
Little Aldouane, N.S.				102-270			
" " N.B		23					
" Anse, N.S		19		35			
" Bras d'Or, N.S.		19		36			
" Current, Ont		31					
" Harbour, N.S.		19		37			
" Lameque, N.B.				103			
" Narrows, N.S.		19					
" River, N.B.		24		117			
" N.S.		19		37			
Little Tancook, N.S.		19		37			
Liverpool, N.S. public building		7	5				

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Livingston Cove, N.S.		19		38			
Lloydminster, Sask., public building		15–45	53				
Lockport, Man.		32					
Locks and Dams				382			
Loggieville, N.B.		23		103–296			
London, Ont., public buildings		12–42	28				
Long Point, N.S.		19		38			
Long Rapids, P.Q.		26		148			
Longueil, P.Q., public building.		9–40	16				
" " dredging		27		149			
Long Sault dam, P.Q.							
Lords Cove, N.B.		23		103–297			
L'Orignal, Ont.		31		206			
Lorneville. N.B.		23		104			
Lotbinière, P.Q.		27		149			
Louisdale, N.S.		19		38			
Louisville, P.Q.		27					
" " post office		9					
Louise Embankment			20				
Louis Head, N.S.		19		38			
Lower Caraquet, N.B.				104			
Lower East Pubnico, N.S.		19		39			
" West Pubnico, N.S.		19		39			
Lower Jemseg, N.B.		24					
Lower Newcastle, N.B.		23		105			
Lunenburg, N.S.		19		271			
" public building		7	5				
Mc.							
McAdam Junct, N.B., custom house		8					
McAras Brook, N.S.		19		47			
McGregors Creek, Ont.		31					
McKays Point, N.S.		19		47			
McKellar River, Ont.				196			
McKinnons Harbour, N.S.				47			
McLeod Harbour, N.S.		19		48			
McMartins Point, P.Q.		27					
McNairs, Cove, N.S.		19		48			
McRitchies Wharf, N.S.				48			
M.							
Mabou, N.S.		19		39			
Maces Bay, N.B.		23		105			
Macleod, Alta, public buildings.		15–45					
Madawaska river, Ont., slides		35		384			
Maders Cove, N.S.		19		271			
Magdalen Islands, telegraphs		36			11–83		
" " P.Q.		27					
Magnetawan, Ont.		31		206			
Magog, P.Q.		27		149			
" " public building		9–40					
Mahone Bay, N.S.		19		272			
Main à Dieu, N.S.				41			
Maisonneuve, P.Q., post office		9					
Maitland, N.S.		19		41			
Manitoba, dredging				237			
" harbours		32		237			
" public buildings.			49				
Maple Creek, Sask., public building.		15–45					
Marble Cove, N.B.		23		114			
Marble Mountain, N.S.		19		41			
Margaree Harbour, N.S.		19		41			

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Margaree Island, N.S		19		41			
" River, N.S		19		42			
Margaretville, N.S		19		42			
Maritime Provinces, telegraphs		36			10		
Marie Joseph, N. S				43			
Marieville, P.Q., public building		9	17				
Marion Bridge, N.S				44			
Maria, P.Q		27		150			
Markham, Ont., post office		12-42					
Markdale, Ont., post office		12					
Marsh bridge, St. John, N.B				120			
Marshalls Cove, N.S				57			
Marsoin, P.Q		27					
Marysville, N.B., public building		8-40	11				
Maskinonge, P.Q		27					
Matane, P.Q		27		150			
Maugerville, N.B		23		113-297			
Maxville, Ont., post office		12					
Meaford, Ont		31		206			
Meat Cove, N.S		19		44			
Medicine Hat, Alta., public buildings		15-45					
Megantic, P.Q., post office		9-40	17				
Melford, Sask., post office		15	53				
Melford, N.S., wharf		19		44			
Merigomish, N.S		19					
Meteghan river, N.S		19		45			
" "		19		44			
Metapedia bridge		35		395			
" Junction, P.Q		9					
Michipicoten, Ont		31		207			
Middle Island, N.S		19		45			
Middle River, N.S		17		45			
Middle West Pubnico, N.S		19					
Midland, Ont		31		207-350			
" " post office		12					
Milford Haven, N.S		19					
Mill Cove, N.B		23		105			
Millerton, N.B		23		105			
Mille Vaches, P.Q		27		151			
Millers rapids, Ont				236			
Milverton, Ont., post office		12					
Mimmegash, P.E.I		22		83			
Minnedosa, Man., public building		14					
Minudie, N.S		19					
Miramichi Bay, N.B		23		105-298			
Miscellaneous		37					
Miscou, N.B		23		106			
Mispec, N.B		23		107			
Mission river, Ont				196			
Mistassini, P.Q		27		151			
Mistook, P.Q		27		151			
Mitchell Bay, Ont		31		208			
Mitchell, Ont, public building		12	29				
Moncton, N.B		23		107			
" public building		8-40	12				
Monday Point, N.S				29			
Monks Head, N.S		19					
Montague, P.E.I., public building		7-39					
Montebello, P.Q		27		151			
Montmagny, P.Q., public building		9-40	18				
" wharf		27		151-336			
Montreal River, Ont		31		208			
Montreal, P.Q., harbour		27					
" public buildings		9-40	18				
Mount Louis, P.Q		27					
Monuments erected		37					
Morden, N.S		19		46			

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Moosejaw, Alta., public buildings		15-45	54				
Mosquito Bay, Ont				208			
Mossy River, Man		32		238			
Mount Forest, Ont., public building		12	29				
Mount Stewart, P.E.I		22		83			
Mulgrave, N.S		19		46			
Murray Bay, P.Q		27		152			
Musquodoboit, N.S		19					
N.							
Naas River, B.C		33		253			
Nadeau, N.B		24		117			
Names of Chief Officers							67
Nanaimo, B.C., public building		16-46	58				
" landing				253			
Nappan, N.S., experimental farm		7					
Napanee, Ont., public building		12-42	29				
Napierville, P.Q., post office		9					
Natashquan, P.Q		27		152			
National Art gallery	16						57
Naufrage Pond, P.E.I		22		84			
Needles, B.C		33					
Neepawa, Man., post office		14-44					
Negro Point, N.B		24		120			
Neguac, N.B		23		107			
Neils Harbour, N.S		20		49			
Nelson, B.C., public building		16-46	59				
Nelson river, B.C		33					
New Brunswick, dredging				281			
" public buildings		8-39					
" telegraphs		36					
" harbours		22		88			
New Carlisle, P.Q		27					
Newcastle, Ont., slides		35					
Newcastle, N.B., public building		8-40	11				
Newcastle, N.B		24		114			
New Edinburg, N.S		20		49			
Newfoundland telegraphs		36				10	
New Glascow, N.S., public building		7	5				
New Harbour, N.S		20					
New Haven, N.S				49			
New Liskeard, Ont		31		209			
New Mills, N.B		23		107			
Newport, P.E.I		22		84			
New Richmond, P.Q		27		152			
New Westminster, B.C	12	33					
" " public buildings		16-46	59				
Niagara Falls, Ont., public building		12-42	29				
Niagara on the Lake, Ont		31					
Nicolet, P.Q		27		153-341			
" public building		9-41					
Nigger Island, Ont				209			
Ninette, Man				238			
Nominingue, P.Q., immigration building		9-41	19				
North Battleford, Sask., public building		15-45					
North Bay, Ont		31		209			
" public building		12-42					
North Cardigan, P.E.I		22		84			
North Hatley, P.Q		26		153			
North Portal, buildings		15-45					
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North Shore, St. Lawrence, telegraph		36			12-87		

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North Sydney, N.S., public building		7	5				
" " wharf				50			
North Timiskaming, P.Q				154			
North Vancouver, B.C., post office		16-46					
Northwest Miramichi, N.B		35		108-299			
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" telegraphs		36			13-98		
Norway Bay, P.Q		27		154			
Notre Dame du Portage, P.Q		27		154			
Notre Dame de la Salette, P.Q		27					
Nova Scotia, harbours		17		3			
Nyanza, N.S		20		50			
O							
Oak Point, N.B		23		108			
" Man		32					
Oakville, Ont		31		210			
Officers of the Department							67
Ogdens Pond, N.S		20					
Okanagan river, B.C		33		253			
Ontario, bridges		35		392			
" dredging				313-344			
" harbours		30		186			
" public buildings		11-42	23				
" telegraphs		36			13-97		
Orangedale, N.S		20		51			
Orangeville, Ont., public building		12-42	30				
Orillia, Ont., public building		12-42	30				
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" building and grounds		11-43	39				
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" public buildings	15	11-43	30				
" post office		11-43	41				
" river				210			
" roads and bridges		35					
" Royal Mint		11-44	40				
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" streets, repairs		43					
Ottawa Brook, N.S		20					
Owen Sound, Ont	9	31		210			
" public building		13-42	44				
Ox Island, N.B		23		114-300			
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Pacific Coast	11						
Panama Canal	12						
Papineauvile, P.Q		27		155			
Paris, Ont., public building		13-42	44				
Parker's Cove, N.S		20		51			
Parkhill, Ont., public building		13-42	44				
Parrsboro, N.S		20					
" public building		7	6				
Parry Sound, Ont				211-353			
" " building		13					
Partridge Island, N.B		24		155			
" " quarantine		8-40	12	121			
Paspebiac East, P.Q		27		155			
Paspebiac, P.Q., custom house		9					
Path End, N.S		20		52			
Pavillions, Ont		31		225			
Pelee Island, Ont., dredging		31		211			

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" " public building		13–42					
Penetanguishene, Ont		31		212–354			
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Peribonka, P.Q		27		155			
" " immigration building		9–41					
Perkins Landing, P.Q		27		156			
Perth, Ont., post office		13					
Petewawa, Ont		31		213			
" " slides		35		385			
Peterborough, Ont		31					
" " public buildings		13–42	44				
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" Bonaventure, P.Q		27					
Petit Escomins, P.Q		27					
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Petite de Grat, N.S		20		52–272			
Petite Lamèque, N.B		23					
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Petit Rivière, N.S		20		53			
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Petrolea, Ont., public building		13–42	44				
Phillipsburg East, P.Q				157			
Phillips, immigration building		45					
Phinneys Cove, N.S		20		53			
Piche Point, P.Q		27		157			
Picnic Island, Ont		31		213–353			
Picton, Ont., public building		13–43					
Pictou, N.S. " "		7	6				
Pictou, N.S		20		53			
Pierreville, P.Q., public building		9–41	19				
" wharf		27					
Pink Rock, N.B		23					
Pipers Cove, N.S		20		54			
Pleasant Bay, N.S				54			
" N.B		23					
Plessisville, P.Q., post office		9–41					
Point Aconi, N.S		20		54			
Pointe à Brousseau, P.Q		27		157			
Pointe à Elie, P.Q		27		158			
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Portage du Fort, bridge				395			
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Port Arthur, Ont	7	31		214–347			
" " public building		13–43					
Port Bruce, Ont		31		216			
Port Burwell, Ont		31		217			
Port Clyde, N.S		20					
Port Colborne, Ont., breakwater		31		220			
" " public building		13-43					

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Port Elgin, Ont		31		220–351			
Port Felix, N.S		20		56			
Port Findlay, Ont		31		221			
Port Hastings, N.S		20					
Port Hill, P.E.I		22		84			
Port Hood, N.S		20		56			
Port Hope, Ont., harbour		31		221–356			
" " public building		13–43					
Port Joli, N.S		19					
Port Lewis, P.Q		27		159			
Port Lorne, N.S		20		57			
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Port Malcolm, N.S				57			
Port Morien, N.S		18		58			
Port Mouton, N.S		20		57			
Port Perry, Ont., post office		13	44				
Port Richmond, N.S		20		58			
Port Rowan, Ont		31		221			
Port Stanley, Ont		31		222			
Port Wade, N.S		20		58			
Porters Lake, N.S		20		55			
Portsmouth, Ont		31					
Poulamond, N.S		20		58			
Powell River, B.C		33		254			
Prescott, Ont., public buildings		13–43					
Prince Albert, Sask	18	33		244			
" " public buildings		15–45	54				
Prince Edward Island, dredging				274			
" " harbours		21		78			
" " public buildings		7					
Prince Rupert, B.C., post office		16–46	59				
" " wharf		33					
Printing and stationery		17					
Proctor Wharf, B.C		33		254			24
Properties purchased and sold							
Providence Bay, Ont		31		223			
Public buildings, Alberta		15–44					
" British Columbia		16–45					
" Manitoba		14–44					
" New Brunswick		8–39					
" Nova Scotia		7–39					
" Prince Edward Island		7–39					
" Ontario		11-42					
" Quebec		8–40					
" Saskatchewan		15-44					
" Yukon		17					
" Generally	14	17					
Puce, Ont		31		223			
Pugwash, N.S		20					
Q							
Quebec, dredging				313			
" bridges		35		392			
" harbours		25		159			
" public buildings			14				
" telegraphs		36			11–85		
Quebec city, harbour	10	27		339			
" public buildings		9–41	19				
Quesnel, B.C., post office		16					
Quoddy Island, N.S		20		59			

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R							
Racine pier, P.Q				160–342			
Raft chann-l, N.B		23		114–301			
Rainy River, Ont		31		224–352			
Recapitulation		38					
Red Bank, N.B		23					
Red Bay, Ont		31					
Red Deer, Alta., public building		15–45					
Red Point, P.E.I		22		85			
Red River, Man		32		238			
Regina, Sask., public buildings		15-45	55				
Renfrew, Ont., public building		13-43					
Rented buildings, Ottawa		44	63				
Rents received							6–18
" paid		39					
Repentigny, P.Q		28		160			
Revelstoke, B.C., post office		16–46	59				
Revenue	6				15		
Rexton, N.B		23		110			
Richards Landing, Ont		31		225			
Richelieu River, P.Q		28		160			
Richibucto, N.B		23		111–301			
" public building		8–40	12				
" Cape, N.B				110			
" River, N.B				111			
Richmond, P.Q., public building		10 41					
Rideau Hall, Ottawa		11	33				
Rigaud, P.Q		28					
" public building		10	21				
Rimouski, P.Q		28		161			
" public building		10–41	21	161			
Rivière à la Pipe, P.Q		28		161			
Rivière au Vases, P.Q		28		162			
Rivière aux Outardes, P.Q		28					
Riviere des Prairies, P.Q		28		162			
Rivière Batiscan, P.Q		28		162–334			
Rivière Baude, P.Q		28		162			
River de Chute, N.B		24					
Rivière du Lièvre, P.Q., lock		28		382			
Riviere du Loup, P.Q		28		163–334			
Riviere Girard, P.Q		28		164			
Riviere Godefroy, P.Q		28		164–343			
River Inhabitants, N.S				59			
Riviere Jesus, P.Q		28					
Riviere l'Achigan, P.Q		28					
Riviere la Guerre, P.Q		28		164			
Riviere Nicolet, P.Q				165			
Riviere Nouvelle, P.Q		28		165			
Riviere Ouareaux		28		165			
Riviere Ouelle, P.Q		28		165			
Riviere Rigaud, P.Q				166			
Riviere Sault au Mouton, P.Q		28		167			
Riviere Saguenay, P.Q		28		180–337			
" " " slides		35					
Riviere St. Charles, P.Q		28		166			
River St. Francis, N.B		24					
River St. Francis, P.Q		28		336			
River St. John, N.B		23		112			
River St. Lawrence, Ont		31		225			
" " P.Q		28		225			
Riviere St. Louis, P.Q		28		166			
Riviere St. Maurice, P.Q		28		177–335			
" " " " slides		35		388			
River Thames, Ont		31		226–355			
Riviere Trois Pistoles, P.Q				167			
Riviere Verte, P.Q		28		167			
Roads and bridges		35		392			

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R							
Roberval, P.Q.		28		167			
Roberval, P.Q., pub. bldg's.		10-41	21				
Robinson's Island, P.E.I.		22		85			
Rock Island, P.Q., post office		10	21				
Rockland, Ont.		31		227			
Rocky Point, P.E.I.		22		85			
Rodney slip, St. John, N.B				119			
Rondeau, Ont.		31		227			
Rosthern, Sask., expt'l. farm		15-45					
Rosseau, Ont		31		228			
Ross Ferry, N.S				59			
Rossland, B.C., pub. bld'g		16-46	59				
Ruisseau à Loutre, P.Q.		28		168			
" à Sem, P.Q.		28		168			
Rows Brook, N.S.		20					
Rustico, P.E.I.		22		86			
St.							
St. Alexis, P.Q		28		168			
St. Anicet, P.Q.		29		170			
St. Alphonse, P.Q.		28		168			
St. Andrew's N.B		24		118-302			
" P.Q		28		169			
St. Andrews rapids, Man				240			
St. Andre, P.Q.		29		168			
Ste. Angele de Laval, P.Q		29		169			
St. Anne de Bellevue, P.Q.		29					
St. Anne du Saguenay, P.Q		29					
Ste. Anne des Monts, P.Q		29		170			
St. Anns, N.S		20		60			
St. Barthelemi, P.Q		29		141			
St. Blaise, P.Q.		29					
St. Boniface, Man., public bld'g		14-44	50				
St. Casimir, P.Q., post office		10					
St. Catharine's, Ont, post office		13-43	45				
St. Charles de Caplan, P.Q.		29		170			
St. Croix, P.Q.		29		171			
St. Denis, P.Q.		28		170			
St. Edouard des Mechins, P.Q				171			
St. Eloi, P.Q.		29		172			
St. Emilie, P.Q.		29		171			
St. Felician, P.Q.		29					
St. Famille, P.Q.		29		172			
St. Felicite, P.Q.		29		172			
St. Flavie, P.Q., station.		10					
St. Francis river, N.B.				117			
St. Francois d'Orleans, P.Q		29		172			
St. Francois du Lac, P.Q.		29		173-335			
St. Gabriel de Brandon, P.Q., post office		10					
Ste. Genevieve, P.Q.				173			
St. George de Malbaie, P.Q.		29		174			
St. Godefroye, P.Q.		29		174			
St. Henri, P.Q., post office		10-41	22				
St. Hilaire, P.Q.		28		174			
St. Hyacinthe, P.Q., public bldg.		10-41					
St. Irenee, P.Q.		29		175			
St. Ignace de Loyola, P.Q.		29		175			
St. Jacques de l'Achigan, P.Q.		10					
St. Jerome, P.Q., public building		10-41	22				
" " wharf.		29		175			
St. Jean des Chaillons, P.Q.		29		175			
St. Jeanne de l'Isle Perrot, P.Q.				176			
St. Jean d'Orleans, P.Q.		29		175			
St. Jean Port Joli, P.Q		29					
St. John, N.B., public buildings		8-40	12				
St. John river, commission		24					

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St							
St. John, N.B., harbour	10	24		119–302			
" " river		23					
St. Johns, P.Q., public buildings		10–41					
St. Johns, P.Q.		29					
St. Joseph, N.S		20		60			
St. Joseph, Ont.		32		228			
St. Joseph d'Alma, P.Q				156			
St. Joseph de Letellier, P.Q		29		176			
St. Joseph de Sorel, P.Q.		29		176			
St. Lambert, P.Q., post office		10	22				
St. Laurent, P.Q.		29		177			
St. Lawrence pavilions		31		225			
St. Leonards, N.B., bridge		35					
St. Louis river, N.B.		24		121			
St. Luce, P.Q.		29					
St. Majorique, P.Q		29		177			
St. Marc, P.Q.		29		177			
St. Marys, Ont., public bldg.		13–43	45				
St. Marys river, N.S.		20					
St. Maurice river, P.Q				177–335			
" " slides		35		388			4–14
St. Michel, P.Q.		29					
St. Paul de Joliette, P.Q.				178			
St. Paul de l'Isle aux Nois, P.Q				179			
St. Paul, N.B., wharf		24					
St. Peter's channel, P.Q.		29		179–342			
St. Pierre les Becquets, P.Q		29					
St. Regis, P.Q., custom house		10–41					
St. Siméon, P.Q.		29		179			
St. Stephen, N.B., public bldg		8–40	13				
St. Stephen, dredging, N.B.		24		121–303			
Ste. Thérèse, P.Q., public bldg.		10					
St. Thomas, Ont., public bldg		13–43	45				
St. Valentin, P.Q.				179			
St. Valier, P.Q.		29		180			
S							
Sabrevois, P.Q.		29		180			
Sackville, N.B		25		122			
Saguenay, P.Q. river				180–337			
" slides		35		390			5
Salmon River, N.S.				55			
Salaries of clerks of works		17					
Salt Point, Ont		31		228–348			
Sambro, N.S.		20		61			
Sand Point, N.B				119			
Sandwich, Ont., public bldg		13–43	45				
Sarnia, Ont		31					
" public bldg		13–43	45				
Saskatoon, Sask., public bldg		15–45	55				
Saskatchewan, public bldg			52				
" river, Man.	18	33		241–396			
Saugeen River, Ont		31		229–352			
Sault Ste. Marie, Ont		31		229			
" public bldg		13–43	45				
Saunders, N.B.		24		117			
Scotch Cove, N.S				75			
Scotts Bay, N.S.		20					
Scotchtown, N.B		24		115–303			
Sea Coal Bay, N S				57			
Seaforth, Ont., public bldg		13–43	45				
Seal Cove, N.B		25		122			
Selkirk, Man., public bldg		14–44					
" wharf		32		241			

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S.							
Seven Islands, P.Q.				181			
Severn river, Ont.		31					
Shag Harbour, N.S.		20		61			
Shawinigan, P.Q., post office		10	22				
Shed ac, N.B.		25		122-304			
Sheet Harbour, N.S.		20		61			
Sheffield Vault, N.S.		20		62			
Shelburne, N.S.		20		62			
" public bldg.		7					
Shepody Bay, N.B.		23					
Sherbrooke, P.Q., public bldg.		10–41	21				
Shigawake, P.Q.		29		181			
Shippigan Gully. N.B.		25		123			
Sidney Island, B.C.		33		254			
Silver Centre, Ont.		31		230			
Simcoe, Ont., public building		13–43	46				
Sinclairs, N.B.		23		299			
Sissons Brook, N.B.		24		117			
Skeena river, B.C.		33		254			
Skinners Cove, N.S.		20		63			
Slides and booms.		35		383		1	
" " officials							
Smileys Point, N.S.		20		63			
Smiths Falls, Ont., public building.		13–43					
Smyth Wharf, Ont.		31		230			
Sober Island, N.S.		20		63			
Scoke Harbour, B.C.				254			
Sorel, P.Q., public building.		10–41					
" wharf		29		181			
Sorrento, B.C.		33		254			
Souris, P.E.I., harbour		22		86			
" " public building		7	8				
Souris. Man., postoffice		14–44	50				
Southampton, Ont.		31		230			
South Cove, N.S.		20		63			
South Gut, N.S.		20		64			
South Ingonish, N.S.		20		64			
South Lake, N.S.		20		65			
South Nation river, Ont.		31					
Southport, P.E.I.		22		86			
South river, Ont.		31		230			
South West Cove, N.S.		20		65			
Spanish river, Ont.		32					
Spanish Ship Bay, N.S.		20		65			
Sperrys Cove, N.S		20		66			
Springhill, N.S., public building		7	6				
Spindlers Cove, N.S.		20					
Spinneys Point, N.B.				124			
Spoon Island, N.B.		25		115			
Steeves Landing, N.B.		25					
Stellarton, N.S., public building		7					
Stewart, B.C.		33		255			
Stettler, Alta., immigration building.		45					
Stonehaven, N.B.		25		124			
Stoney Island, N.S.		20		66			
Stratford, Ont., public building		13-43	46				
Stratford Centre, P.Q.		26–29		182			
Strathcona, Alta, public building		16–45	56				
Strathroy, Ont., " "		13–43					
Sturgeon Falls, Ont.		32		231			
Sudbury, Ont.		13					
Summerside, P.E.I., public building		8	8				
" " harbour.		22		87–280			
Summertown, Ont.		32		231			
Surf Inlet, B.C.		33		255			
Surveys and inspections	18	24-37		118			
Sussex, N. B. public building.		8–40	14				

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S							
Swain Cove, N.S		21		67			
Swift Current, Sask., immigration building		16–45					
Swims Point, N.S		21		67			
Sydenham River, Ont		32					
Sydney, N.S., public building		7	6				
" wharf		21	67				
Sydney Mines, N.S		21	68				
" public building		7					
T							
Tadousac, P.Q		29		182			
Tangier, N.S		21		68			
Telephones					16		
Telegraph and Nigger Island, Ont		32		348			
Telegraph lines, generally		35			6-14		
" reports					1		
" revenue					15		
" staff					18		
Tenecape, N.S		21		68			
Terrebonne, P.Q., public building		10–41					
Thessalon, Ont		32		231			
Thetford Mines, P.Q., public building		10–41	23				
The Wharfs, N.S		21					
Thompson River, B.C		33		255			
Thornbury, Ont		32		232			
Three Fathom Harbour, N.S		21		69			
Three Rivers, P.Q., public buildings		10–41					
" wharf		29		183			
Tiffin, Ont	10	32		346			
Tignish, P.E.I		22		87			
" public building		8	9				
Tikouabe, P.Q		29					
Tilbury, Ont.,		13	46				
Tilsonburg, Ont., post office		13	47				
Timiskaming telegraphs		36			13–90		
Tisdale, Sask., immigration building		16					
Tobermoray, Ont		32		232			
Tofino, B.C		33		256			
Toney River, N.S		21		69			
Toronto, Ont., public buildings		13–43	47				
" harbour		32		232-344			
Toronto Junction, Ont., post-office			48				
Total expenditure of department		38					89
Tracadie, N.B., lazaretto		8–40	14				
Tracadie, N.B		25		124			
Tracadie, P.E.I		22		88			
Transcona, Man., post office		14					
Traverse, N.B		25					
Traynors Cove, N.B		25					
Treadwell, Ont		32					
Trent and Newcastle slides							5–15
Trenton, Ont., public building		13-43	48				
Tring Junction, P.Q		10					
Trois Pistoles, P.Q		29					
Trout Cove, N.S		21		70			
Trout River, N.B		24		117			
Troy Pond, N.S				70			
Truro, N.S., public building		7	7				
Trynors Cove, N.B				125			
Tusket Wedge, N.S		21		70			
Tweed, Ont,. station		13					
Two Creeks, Ont		32					
Two Mile Narrows, Ont		32					
Tynemouth Creek, N.B		25		125			
Tyrian S.S. cable ship		36			13–121		

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U							
Union Bay, B.C.		33		256			
Unity immigration building		45					
Upper Fraser River, B.C.		33		256			
" Lillooet "		33					
Upper Maugerville, N.B.		24		114			
" Prospect, N.S.		21		71			
" Ottawa storage dams		37					
Upper Salmon River, N.B.		25					
Upper Washabuck, N.S		21		71			
Urquharts Landing, N. S.		21		72			
Uxbridge, Ont., post office		13	48				
V							
Val du Bois, P.Q.		28		183			
Valleyfield, P.Q.		29					
" public building		10-41					
Vancouver, B.C., public building		16-46	60				
" harbour	11	33		257			
Vanda immigration building		45					
Vaudreil, P.Q.		29		183			
Vegreville, Alta		16					
Vercheres, P.Q.		29		184			
Verdun, "		29		184-337			
Vermillion, Alta., immigration building		45					
Vernon, B.C., public building		16	60				
Victoria, B.C	11	33		257			
" " public building		16-46	61				
" Beach, Man.		32		242			
" " N.S.				58			
" Harbour, Ont.		32		234-345			
" Island, Ont.		32					
" County, N.B.		24		118			
" Pier, N.S.		21		72			
Victoriaville, P.Q., public building		10-41	23				
Viking, Alta., immigration building		16					
Ville Marie, P.Q.		29		185			
Virden, Man., immigration building		44					
Voglers Cove, N.S.		21					
W							
Wainwright, Sask., immigration shed.		16-45					
Walkerton, Ont., public building		13-43	48				
Wallaceburg, Ont., post office		13-43					
" " dredging		32					
Waterloo, Ont., public building		13	49				
Watt Settlement, N.S.		21		72			
Waubaushene, Ont		32		234-346			
Weedon, P.Q., post office		10					
Welchpool, N.B.		22		125-304			
Welland, Ont., public building		14-43					
" River, Ont.				235			
Wendover, Ont.		32		235			
West Advocate, N.S		21		73			
West Arichat, N.S.		21		73			
West Baccaro, N.S.				73			
West Bay, N.S.		21		73			
" N.B				305			
West Chezzetcook, N.S.		21		74			
Westmount, P.Q., post office		10					
Westport, N.S.		21		74			
Westville, N.S., public building		7					
West Pubnico, N.S				75			
Westaskawin, Alta., public building		16-45	50				

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W							
Weyburn, Sask., post office		16		55			
Weymouth, N.S , custom house		7					
Wheatley, Ont		32		235			
Whitby, Ont, harbour		32		235			
" public building		14-43					
White Head, N.B		25					
Whitehorse, Y.T., post office		17					
White Point, N.S		21		75			
Whites Cove, N.S		21		76			
Whitewater, N.S		21		76			
Whycocomagh, N.S		21		77			
Wiarton, Ont		32		236			
" post office		14					
Wilkie, immigration building		16-45					
Williams Head, B.C., quarantine station		16-46	61				
Willow Creek, Sask., "		16	55				
Wilmot's N.B		24		114			
Wilson's Beach, N.B		22		126-305			
Windsor, Ont., public building		14-43	49				
" " dock		32		236			
" N.S., public building		7	7				
" " harbour		21					
Wingfield Basin, Ont		32					
Wingham, Ont., public building		14-43					
Winnipeg, Man., "		14-44	50				
" " wharf				243			
" River, Ont				236			
" Man., bridges				396			
Winnipeg Beach, Man		32		242			
Woburn, P.Q				185			
Wolfville, N.S., public building		7	7				
" wharf		21		77			
Woodlands, N.B		25		126			
" P.Q		29		185			
Woods Harbour, N.S.		18-21					
Wood Islands, P.E.I		22		88			
Woodstock, N.B., public building		8-40	14				
" Ont., "		14-43	49				
Wreck Cove, N.S				78			
Y							
Yamachiche River, P.Q		27		185			
Yamaska, P.Q		29					
" River, P.Q., lock and dam		30		382			
Yarmouth, N.S		21		78-273			
" public building		7	7				
Yonker, Sask., immigration building		45					
Yorkton, Sask., public buildings		16-45					
York bridge		35					
Yukon, public buildings		16					
" telegraphs		36			13-113		

PART I

REPORT

OF THE

DEPUTY MINISTER OF PUBLIC WORKS

FOR THE YEAR ENDED MARCH 31

1912

REPORT

OF THE

DEPUTY MINISTER OF PUBLIC WORKS

FOR THE

FISCAL YEAR ENDED MARCH 31, 1912.

OTTAWA, October 31, 1912.

Hon. ROBERT ROGERS,
Minister of Public Works of Canada,
Ottawa, Ont.

SIR,—I have the honour to submit herewith the report of the Department of Public Works, for the fiscal year ended March 31, 1912.

Before dealing, however, in a detailed way with the particular works which have claimed the attention of the department, during the year under review, I would like to set out, as a matter of record, certain general information relating to the department; and some statistics which have been gathered, illustrative of its rapid and steady growth concurrently with that of the country as a whole.

The first public works in Canada, consisted of the construction of roads and bridges. These were, from the early settlement of the French regime, under the control of an officer known as the 'Grand Voyer.' After 1820, came the period of canal construction and harbour improvements; and, after 1831, what may be called the period of railway building.

From 1763, and previous to the organization of the Board of Works in 1835, the works, excepting roads, bridges and public buildings, undertaken by the provinces, were placed under the control of commissioners. Such works included canals, excepting important military canals, harbour works and lighthouses.

The construction of public works, as now recognized, may be said to have commenced with the Union in 1841, since which time the different administrations have projected, or executed, important works in accordance with the appropriations which Parliament, from time to time, has placed at their disposal. Canals have been improved; railways built; harbour works, graving docks, dredging, telegraph lines, slides and booms, public buildings and other necessary works, have been constructed.

In 1868, the population of Canada was about 3,000,000; total revenue, $13,687,928; expenditure, $13,486,092; imports, $73,459,644; exports, $57,567,888; miles of railway

in operation, 2,269; number of buildings transferred from the province of Canada, 30; harbour works, 38; slides and booms, 3; also roads and bridges, lighthouses, beacons, &c. In addition to this list, transfers were made by the provinces of Nova Scotia and New Brunswick of several harbour works, a few buildings and the railways, but the above list does not include government houses, parliament buildings, asylums, court houses and jails, afterwards transferred to the control of the different provinces.

On December 21, 1867, an Act of the Dominion parliament, entitled 'An Act respecting the Public Works of Canada,' was passed, organizing a Department of Public Works for the Dominion, under the direction of a Minister of Public Works. Under this Act, and the general provisions of the British North America Act, also under other Acts relating to the Public Service, the works formerly in charge of the Commissioners of Public Works, were disposed of as follows:—

1. Canals and works on navigable rivers, constructed by the provincial governments previous to July 1, 1867, were placed under the care of the Department of Public Works;

2. The construction of such harbours and piers, as parliament authorized, was entrusted to the Department of Public Works;

3. The construction of lighthouses was confined to the Department of Public Works, while the duty of enforcing the regulations for their lighting and management, and obtaining of supplies was transferred to the Department of Marine and Fisheries;

4. The slides and booms constructed by the government, for facilitating the passage of timber in navigable waters, were placed under the Department of Public Works;

5. The charge of the greater portion of the roads and bridges was transferred to the local governments, but the construction of military and interprovincial highways was reserved for the Department of Public Works;

6. Certain public buildings were transferred to the local governments, but others remaining with the Dominion were put in charge of the Department of Public Works;

7. The management of the provincial vessels was transferred to the Department of Marine and Fisheries.

At this time, the lowest depth of water in the Lachine, and other St. Lawrence canals, was nine feet; Welland canal, 10¼ feet; Sault Ste. Marie, 12 feet; Burlington bay, 10 feet, and the Montreal and Quebec ship channel, 20 feet.

During the fiscal year 1867-8, the total expenditure of the Department of Public Works was $1,459,560.80, on canals, slides and booms, harbours and piers, light-houses, roads and bridges, public buildings, surveys and railways. A further expenditure was incurred on provincial steamers and maintenance of light-houses, amounting to $65,228.01, but these were immediately transferred to the Department of Marine and Fisheries.

In 1879, the Department of Railways and Canals was carved out of this department, and took over the control of all the government railways and canals, according to the provisions of Act 42, Victoria, chapter 7; this department retaining possession of

public buildings, which comprised the parliament buildings and residences of the Governors General, customs houses, examining warehouses, inland revenue offices, post offices, penitentiaries and prisons, quarantine stations, immigration buildings, marine hospitals, military buildings and drill sheds, all ports, harbours, rivers, piers, &c., dredging, slides and booms, military and interprovincial roads and bridges and telegraph lines. The total number of public buildings was 105; of harbour works, 300; of slides and booms, 3; bridges, 9, and telegraph lines, 1,520 miles. The total expenditure incurred during that fiscal year, by this department, was $1,550,930.04.

In 1882, the population of Canada was 4,324,810; total revenue, $35,182,549; expenditure, $34,674,625; imports, $119,419,500; exports, $102,137,203; the railway mileage was 7,530; the lowest depth of water in the ship channel was 25 feet, excepting at Cap à la Roche and Cap Charles. Preparations were being made to deepen the St. Lawrence canals to 14 feet. This had already been accomplished on the Lachine and Welland canals, only.

In 1892, the population of Canada was 4,833,239; total revenue, $36,921,872; expenditure, $42,272,136; imports, $127,409,068; exports, $116,978,943, while the railway mileage had increased to 14,538 miles. The total expenditure made by the department, in that year, was $2,084,644.38; the number of buildings under its control was 159; harbour works, about 381; slides and booms, 3; graving docks, 3, and telegraph lines, 2,750 miles. Within this period of 10 years, the department had constructed the three graving docks, at Levis, Kingston and Esquimalt. Experimental farms had been established; the dredging plant had been increased; many public buildings had been erected; a number of small wharfs and buildings had been purchased from Nova Scotia and Prince Edward Island, and several new works had been constructed.

In 1902, the population of Canada was 5,371,315; total revenue, $58,052,333; expenditure, $63,970,799; imports, $212,270,158; exports, $211,640,286, and miles of railway in operation, 18,714. The expenditure made by the department was $6,786,-799.20; number of public buildings under its control, 285; harbour works, 563; slides and booms, 3; graving docks, 3, and telegraph lines, 5,671½ miles. The depth of water in the ship channel, 27½ feet; depth in the St. Lawrence canals, 14 feet. In the interval, 1892 to 1902, the construction, repair and maintenance of penitentiaries was transferred to the control of the Department of Justice, and the construction of lighthouses was handed over to the Department of Marine and Fisheries. In several of the annual reports, notably that of 1900, special attention had been directed to the necessity for improved transportation facilities, and the commission appointed for that purpose made an investigation, and prepared and submitted a very comprehensive report. The north shore telegraph line was extended to Belle Isle, and a new line constructed to the Yukon.

In 1912, the population of Canada is 7,204,527; total revenue, $136,108,217.36; expenditure, $129,960,416.97; imports, $559,320,544; exports, $315,317,250; miles of railway in operation, 26,200. The expenditure incurred by the department in the fiscal year 1912, is $13,928,666.87; number of buildings, 328; harbour works, 1,244; miles of telegraph, 8,639¾, with 624 offices.

Owing to the fact that only five-twelfths of the department's appropriations were available when parliament dissolved on July 29, 1911, the balance not being voted until the season of construction was over, the expenditure for the year under review was proportionately not as large as that of previous years.

EXPENDITURE.

The total expenditure of $13,928,666.87, above mentioned, was incurred in connection with the following services:—

Harbour and river works	$ 3,168,987 28
Dredging, plant, &c	5,029,147 43
Slides and booms	174,833 78
Roads and bridges	197,627 64
Public buildings	4,141,326 94
Telegraphs	641,758 78
Miscellaneous	574,985 02
	$13,928,666 87

REVENUE.

The revenue for the year, amounting to $418,630.79, is made up from the following sources:—

Slides and booms	$ 87,789 73
Graving docks	50,614 84
Rents	33,354 76
Telegraph lines	200,330 20
Casual revenue	46,541 26
	$418,630 79

There is a marked increase in the telegraph revenue, as compared with former years; last year's collections amounting to $169,585.15, and that of the preceding year $136,747.31. This is not attributable to any particular line, but results from a general increase of business on all the government telegraph lines throughout the Dominion.

HARBOUR AND RIVER WORKS.

The expenditure under this heading, amounted to the sum of $3,168,987.28.

The following works, given by provinces have been completed during the year:—

Nova Scotia.—Arichat, Dover, East Bay, Gillis Point, Leitches Creek, Port Felix, Sheet Harbour, Shelburne, South Cove and Westport wharves; breakwaters at Battery Point, Black Point, Blue Rocks, Burks Head, Delorys Beach, Cottage Cove, Little River, Little Tancook, New Edinburgh, Shelburne, South Cove and Westport.

Prince Edward Island.—Lennox Island and Port Hill wharves, and a breakwater at Tracadie.

New Brunswick.—Bayside, Maces Bay, New Mills, Shediac, Trynors Cove and Woodlands wharves, and a pier at Great Salmon River.

Quebec.—Aylmer, Boisbriand, Fassett, Fort William, Montebello, North Hatley, Norway Bay, Papineauville, St. Andrews, Stratford Centre and Tadousac wharves; while breakwaters were built at Paspebiac East, Roberval, Ste. Anne des Monts and Sorel.

Ontario.—Wharves were built at Coldwater, Gravenhurst and Michipicoten.

Manitoba.—A pier was constructed at Winnipeg Beach.

British Columbia.—Wharves were built at Harrop, Hollyburn, Kokanee, Sorrento and Surf Inlet; a dam at Harrison River, and a breakwater at Powell River.

Other works which have been placed under contract, but not yet completed, are:—

Nova Scotia.—French River, Leonards Cove and St. Joseph breakwaters; Mulgrave, Orangedale and Watt Settlement wharves.

New Brunswick.—A breakwater at Dalhousie, and wharves at Black River, Gooseberry Cove, Grandigue and Sackville.

Quebec.—Wharves at Gaspé Basin, Levis, Natashquan, St. Ignace de Loyola East; a breakwater at St. George de Malbaie, and a dock at Three Rivers.

While it will be seen from the above, the department is not neglecting the construction of the smaller wharves and landing places, which provide for the requirements of local commerce, as well as the construction of breakwaters and boat shelters for the fishing industry, the period has now been reached in Canada's development when necessity demands that large sums be expended in the up-to-date equipment of the larger and more important harbours, which may be termed 'Canadian National Ports.'

Large expenditures have already been made in improving the harbours of the twin cities, at the head of the lakes—Port Arthur and Fort William; At Tiffin and Port McNicoll on the Georgian Bay, and at Montreal.

At the latter port, an additional elevator of 2,622,000 bushels capacity has recently been completed, and the Harbour Commission are proceeding assiduously with the carrying out of the elaborate scheme of development decided upon a few years ago. The preparation of the site for the new large floating dry dock, which has been named 'The Duke of Connaught,' is now almost completed, and the dock itself has been brought across the Atlantic in safety.

The extensive scheme of harbour improvement by breakwaters and dredging at Fort William and Port Arthur, is being rapidly executed. At present, these two harbours have a combined elevator capacity of 26,360,000 bushels; and additions and new elevators are under construction with a capacity of 10,500,000 bushels, which will make the grand total of elevator accommodation for next season:—36,860,000 bushels.

Following is a list of the elevators with their individual capacity:—

FORT WILLIAM.

Name.	Capacity.		Owner.
Empire	1,750,000	bushels	Empire Elevator Co.
Elevator "A"	1,250,000	"	Canadian Pacific Ry. Co.
" "B"	500,000	"	" "
" "C"	1,250,000	"	" "
" "D"	3,000,000	"	" "
" "E"	2,000,000	"	" "
Ogilvie's	1,100,000	"	Ogilvie Milling Co.
Consolidated	1,750,000	"	Consolidated Elevator Co.
Western	900,000	"	Western Terminal Elevator Co.
Black & Muirhead	125,000	"	Black & Muirhead.
Davidson & Smith	80,000	"	Davidson & Smith, Ltd.
A. E. Fenton	50,000	"	A. E. Fenton & Co.
W. D. Muirhead	40,000	"	W. D. Muirhead & Co.
G. T. P.	3,250,000	"	G. T. P. Terminal Elevator Co.
Total	17,045,000	"	

PORT ARTHUR.

Canadian Northern Ry	7,000,000	bushels	Canadian Northern Ry. Co.
Thunder Bay Elevator	1,500,000	"	Thunder Bay Elevator Co.
King's Elevator	750,000	"	Canadian Pacific Ry. Co.
National Elevator	65,000	"	National Elevator Co.
Total	9,315,000	"	
Grand total	26,360,000	"	

Following are the additions and new elevators being constructed:—

FORT WILLIAM.

Fort William Terminal	2,250,000	bushels	Fort William Terminal Elevator Co.
Grand Trunk Pacific Extension	2,500,000	"	G. T. P. Terminal Elevator Co.
Total	4,750,000	"	

PORT ARTHUR.

Canadian Northern Ry	2,500,000	bushels	Canadian Northern Ry. Co.
Dominion Grain Commission Elevator	3,250,000	"	Government-owned.
Total	5,750,000	"	
Grand total	10,500,000	"	

As a result of improved conditions, the following industries have located:—

THE FORT WILLIAM COAL DOCK COMPANY erected a modern coal handling plant on the Mission river, with a storage capacity of 100,000 tons, and have constructed a dock 1,165 feet in length;

SEAMEN KENT & COMPANY, have located on the Mission river a hardwood finishing plant employing some 200 hands, and have constructed dockage 600 feet in length;

THE GRAND TRUNK PACIFIC RAILWAY COMPANY constructed on the Mission river a rail dock 500 feet in length;

THE INTERNATIONAL HARVESTER COMPANY erected a dock and storage warehouse 300 feet in length on the Kaministiquia river.

THE IMPERIAL OIL COMPANY erected five large storage tanks on the Kaministiquia river and constructed a dock 300 feet long;

On the McKellar river, the CANADIAN PACIFIC RAILWAY COMPANY erected a one million dollar coal handling plant, and constructed 1,800 feet of concrete dockage along this improved water-way;

There is now under construction, large car works of THE CANADA CAR COMPANY, which, when completed, will employ 5,000 hands; this concern will utilize dockage 500 feet in length;

THE NANTON STARCH WORKS is now under construction on lots 6 and 7, concession 'D,' Mission river, and will have dockage 700 feet in length;

THE WIRE WORKS COMPANY are starting construction on their building, and will require dockage of some 300 feet in length;

THE GRAND TRUNK PACIFIC RAILWAY having acquired the McKellar property have constructed dockage and a freight shed on the Kaministiquia river 600 feet in length, opposite McKellar river, for the handling of local freight;

THE CANADIAN PACIFIC RAILWAY COMPANY have doubled the capacity of their freight-shed on dock No. 5, and have now a total freight-shed length of some 900 feet;

THE MCKELLAR BEDDING COMPANY are constructing a factory in this city, but will not require a dockage location.

PORT McNICOLL.

At Port McNicoll, the Canadian Pacific railway has added another unit of 2,000,000 bushels to its elevator, bringing the capacity up to 4,000,000 bushels. On the side of the slip, opposite the elevator, the company has completed 3,600 feet of wharf of cribwork substructure with concrete superstructure. On the elevator side of the slip, cribwork substructure is in position for a distance of 800 feet northerly and 500 feet easterly. This cribwork substructure has been extended southerly from the end of the concrete wharf, in front of the elevator, some 1,400 feet, making in all 2,700 feet of cribwork substructure, which is ready to receive the concrete superstructure.

Up to the end of September, all the Canadian Pacific Railway Company's steamers, five in number, namely:—*Keewatin, Assiniboia, Athabaska, Alberta* and *Manitoba* have been sailing from this port, having left Owen Sound as a terminal. During this season, these vessels have carried some 21,945 passengers and 251,756 tons of freight. The large grain boats have carried to this port, during the present season, 3,341,000 bushels, and it is expected this quantity will be greatly increased before the close of navigation. The department expects to complete the work of dredging the slip this fall, with the exception of the berths for the cribs for the construction of the wharf along the slip extension, which will be 900 feet in length.

TIFFIN.

At Tiffin, the slip is now completed for the entire length of the elevator wharf, and up to September 30, 1912, 12,652,686 bushels of grain have been received at the elevators at this place and Midland. Last year, a total of 24,758,000 bushels were handled, and it is anticipated this quantity will be exceeded by the close of the present season.

ST. JOHN, N.B.

At St. John, on the Atlantic seaboard, a contract of $7,500,000 has been awarded to the Norton Griffiths Company, Limited, for the construction of a breakwater, wharves and dredging in Courtenay bay. There is also included in the contract, the construction by this firm of a first-class graving dock. Excavation is being carried on at the site of the proposed dry dock; three steam shovels and three steam drills being employed. The excavated earth is being used for reclaiming land to be used by the company for its shipbuilding yard, and the excavated rock is being placed on the breakwater site.

On the west side of St. John harbour, where the Canadian Pacific railway has its terminal facilities and where the company are erecting a grain elevator of 1,031,000 bushels capacity, a three-quarter of a million dollar contract for wharfage is now in course of execution by Mr. M. Connelly; and the intention is, as requirements demand, to extend these wharves, thus providing a series of slips on that side of the harbour. The necessary dredging on the site, and approach thereto, is being performed under contract with the Maritime Dredging and Construction Company, Limited. The foregoing harbour improvements, with all of which a substantial beginning has been made, will transform St. John into a harbour of first rank.

QUEBEC.

At the port of Quebec, pier No. 1 has been completed, and is equipped with warehouses. It is proposed, shortly, to invite tenders for the construction of two additional piers, to be known as piers 2 and 3. Earnest endeavour has also been put forth to secure the construction for the port of Quebec, under the Dry Docks Subsidies Act, of a first-class dry dock, the necessity for which is fully recognized, as there are a goodly number of vessels navigating the St. Lawrence route which cannot be accommodated by the existing Lorne dry dock at Levis.

During the past summer proposals, under the Subsidies Act, were invited by public advertisement. None, however, in conformance with the provisions of the Act, were received, although an offer was submitted by a prominent English contracting firm to construct a suitable dry dock directly for the government. It would seem therefore that the only course open is for the government itself to build a dock.

These brief references will be sufficient to demonstrate that Canada is fully alive to the requirements and prospects, in so far as commerce, through the Atlantic ports and that of the Great Lakes, is concerned.

PACIFIC COAST.

Now what of the Pacific.—With the opening of the Panama canal, British Columbia ports are looking forward to an immense development, which expectation would appear to be fairly well founded. In anticipation of the opening for traffic, within two or three years, of the New Southern Waterway, substantial appropriations were secured at the last session of parliament to enable a commencement to be made in the development of the ports of Vancouver and Victoria. Owing to the restricted area of the inner harbour at Victoria, it will be necessary to provide accommodation for the large heavy draught ocean carriers in the outer harbour, where Messrs. Rithet & Company have their wharves, which, at present, provide for that class of shipping.

A careful study of existing conditions was made by Consulting Engineer, Mr. Louis Coste; and, as a result of his report, plans were prepared and tenders invited for the construction of a breakwater from Ogden Point, to provide the necessary shelter to enable wharves to be constructed in the outer harbour. It will be of the rubble mound type, 2,500 feet in length, surmounted by a wall of mass concrete for the whole length of the breakwater.

The outer harbour has an area of nearly three hundred acres of water, with a varying depth of from thirty to eighty feet. The proposed breakwater will not only provide effective shelter for piers, hereafter to be constructed inside it, but in addition, will protect the entrance to the inner harbour, immensely benefiting the large and rapidly increasing number of coasting vessels entering and leaving the inner harbour.

Besides the principal companies in the British Columbia coast service, the Canadian Pacific Railway Company; the Grand Trunk Pacific Railway Company; the Union Steamship Company of Vancouver; the Boscowitz Company; the Northern Steamship Company, there is the large Dominion government fleet, operated by the Departments of Marine and Fisheries and Public Works, as well as a large fleet of freighters, tugs and fishing vessels, belonging to private owners.

Engaged in the Trans-Pacific trade to the Orient, we have:—

The Canadian Pacific Railway,
The Blue Funnel line,
The Bank line,
The Nippon Yusen Kaisha (Japan Mail),
The Osaka Shosen Kaisha (Japan)

and, in addition to these, there are regular monthly steamers to Australia and New Zealand; steamers to Mexico; the Maple Leaf line of New York, and the Harrison line from Antwerp, Liverpool and Glasgow.

Vancouver.—For the city of Vancouver harbour, the services of Mr. A. D. Swan were secured, an English engineer who had been employed in the elaboration of the plans for the development of the harbour of Montreal; and the department now has a staff of engineers busily engaged in making a survey and taking test borings in the harbour to enable a conclusion to be reached with respect to the surveys which have been made.

At present, there are the following wharves which can accommodate heavy draught ships:—

Canadian Pacific Railway wharf,
Johnson Wharf Company's wharf,
Evans, Coleman and Evans wharf.
Grand Trunk Pacific wharf, and
Great Northern Railway wharf, which is now under construction.

The latter is a concrete structure, the first of its kind in British Columbia, and will cost over one-quarter of a million dollars. All the other wharves are of ordinary wooden pile construction; the piles being first treated by various methods to protect them from the teredo, which is very destructive on the Pacific, as well as on the Atlantic coasts.

The city council of New Westminster, on the Fraser river, with praiseworthy initiative, have arranged to expend the sum of $500,000 in the construction of wharves along the water front, and the extending of Front street to afford room for trackage, &c. New Westminster, in providing for ocean going terminals, has an immense advantage over the cities of Vancouver and Victoria, inasmuch as almost the entire water front is publicly owned; and, moreover, the water being fresh, a much cheaper method of wharf construction can be used than in either of the other harbours.

It is generally conceded that the Panama canal will revolutionize the world's trade routes, and the principal Canadian ports on the Pacific entertain the most sanguine hopes respecting the expansion of commerce, which is expected to follow the opening of this new inter-oceanic waterway. It is true, it will not open up entirely new countries to western Canadian trade, but it will bring British Columbia and the western provinces into closer touch with European markets already partly developed. The products of the farms, the mines and the fisheries of British Columbia, and the grain of the Prairie provinces, will find a new outlet to eastern markets.

The trade routes between Atlantic, American and European ports, and Vancouver and Victoria, B.C., will be affected as follows—by the Panama canal:—

The distances are given in nautical miles.

To	From Liverpool via		From Hamburg via		From New York via		From St. John, N.B., via	
	Cape Horn.	Panama.	Cape Horn.	Panama	Cape Horn.	Panama.	Cape Horn.	Panama.
Vancouver	14,342	8,676	14,723	9,195	13,975	6,102	14,475	6,500
Victoria.....	14,260	8,594	14,641	9,113	13,893	6,020	14,393	6,418
Saving in distance by Panama route	5,666 miles.		5,528 miles.		7,873 miles.		7,975 miles.	

So far as Australia is concerned, the distances are:—

Vancouver to Sydney, Australia	7,265	naut. miles.
New York to Sydney, Australia, via Cape Horn.	12,852	"
" " via Panama...	9,811	"
Liverpool to Sydney, Australia, via Suez	12,233	"
" " via Panama	12,342	"

As to the Orient:

Vancouver to Yokohama	4,283	naut. miles.
New York to Yokohama, via Suez	13,079	"
" via Panama	9,798	"
Liverpool to Yokohama, via Suez	11,678	"
" via Panama	12,372	"

There would seem to be no reason, if facilities are provided, why millions of bushels of western grain should not find an outlet through Panama, and that, without in any way injuring or preventing the growth of the traffic in this commodity now enjoyed by the lake ports and Montreal and St. John. The eastern rail and water route is not now, nor is it likely ever to be, able—with its limited shipping season—to handle the fast increasing crop; and, moreover, a goodly portion of the grain which now comes east, through Fort William and Port Arthur, passes out by way of Buffalo to United States ports.

Let us look, for a moment at some distances:—

Calgary to Vancouver	646	miles.
" Fort William	1,256	"
" St. John	2,732	"
Regina to Vancouver	1,126	"
" St. John	2,252	"

While a carload is making one trip to St. John with Alberta wheat, it can make four to Vancouver; while it is making one trip to St. John with Saskatchewan wheat, it can make two to Vancouver. The rolling stock of all the transcontinental railways is now quite insufficient to move the crop by existing routes without tremendous loss, in depreciation and waste, waiting for shipment. With the establishment of large storage elevators on the Pacific, the cars available for Alberta grain,—which is naturally last served, under present conditions, can be made do four-fold duty. The canal route to Europe, through Pacific ports, has the advantage of being an all-the-year route, whereas the combination of rail and vessel route across the continent is inoperative for five months in the year by reason of frozen waterways. From December to May, particularly, much grain should therefore go annually to Europe by Pacific ports, from points, even, in Saskatchewan province,—too far distant from St. John or Portland to make the long rail haul remunerative. There is one objection, apparently of a serious character, which has been raised against the southern route, and that is, that in the warm, humid, climate there is danger of grain heating, but I have no doubt means will be devised to successfully overcome that drawback; in fact, I believe it is claimed to have been already overcome at Portland, Ore.

To attain first-rate importance, a port must be a well balanced port, by which is meant, one at which a steamer can take on a full return cargo as well as bringing to it a full inward cargo. The Pacific ports of Canada are exceptionally well situated from that standpoint, for, through them, will flow the products of British Columbia, Alberta and Saskatchewan; thus assuring to all steamship lines, bringing inward loads, a well balanced trade both ways.

Another advantage which western Canada should reap, from the joining of the two oceans, is an enormous increase in immigration due to the lowering of the cost of travel for steerage passengers, when it becomes possible to send them thither all the way by water from the various ports of Europe. It now costs an immigrant, on the average, about $20 to cross the continent from an Atlantic port, and a great many of them will, without doubt, save fare by booking directly to Pacific ports. Moreover, the fact that the coast climate is, in many respects, similar to that to which they are accustomed, should prove exceptionally attractive to the south of Europe immigrants.

PUBLIC BUILDINGS.

The following buildings were completed during the year:—

New Brunswick.—Campbellton and Hartland public buildings;

Quebec.—Montreal post office addition;

Ontario.—Elora and Fergus public buildings;

Manitoba.—Souris public building;

Saskatchewan.—Battleford public building and Prince Albert penitentiary workshops;

British Columbia.—Prince Rupert hospital.

There are, under construction, in the various provinces, the following buildings:—

Nova Scotia.—Parrsboro and Wolfville public buildings;

Prince Edward Island.—Summerside Armoury and Tignish public building;

New Brunswick.—Fairville, Grand Forks and Hillsborough public buildings;

Quebec.—Arthabaska, Megantic, Marieville, Rigaud, Roberval, Rock Island, St. Lambert and Shawinigan Falls public buildings; Montreal Postal Station 'C,' Quebec City new immigration building and Montreal reconstruction of general post office;

Ontario.—Chesley, Dresden, Dundas, Essex, Harriston, Listowel, Mitchell, Mount Forest, Port Perry, Seaforth, Tilbury, Tillsonburg, Uxbridge and Waterloo public buildings;

Manitoba.—Portage la Prairie public building;

Saskatchewan.—Gravelburg, Humboldt, Lloydminster, Melfort, Moosejaw and Weyburn public buildings;

Alberta.—Calgary immigration building, Strathcona public building and armoury, and Westaskiwin public building;

British Columbia.—Chilliwack, Cranbrook, Grand Forks and Vernon public buildings; and a new examining warehouse at Vancouver.

SITE FOR NEW DEPARTMENTAL BUILDINGS.

On February 27, 1912, authority was given by Order in Council to expropriate the properties, in the city of Ottawa, included in the area bounded by Bank and Wellington streets, and the Ottawa river as far west as, and including, the Perley Home, to serve as a site for the erection, from time to time, as necessity demands, of new departmental buildings. The urgent need of such provision has been apparent for some time, as a survey of the situation—with respect to the accommodation for government offices—readily shows.

The government now has under rental in the city of Ottawa, buildings with a combined office area of 402,986 superficial feet. Some adequate idea of what this means, can be formed, when it is stated that the superficial feet of net floor area of the present departmental buildings combined, East, West and Langevin blocks, amounts to only 252,603 superficial feet, made up as follows:—

East block, including addition about completed..	85,995	sup. ft.
West block..	102,294	"
Langevin block..	64,314	"
Total..	252,603	"

The growth during the past ten years has been very great; the increase in the number of government employees necessarily requiring to keep pace with the ever increasing business of the country, resulting from its rapid development.

To illustrate this, let us take years 1900-01, 1905-06 and 1910-11:—

In 1900-01, the net floor area leased was 38,970 superficial feet; and the rental paid, $8,690;

In 1905-06, the net floor area under rental was 132,685 superficial feet; and the rental paid, $48,745;

In 1910-11, this had increased to 365,221 superficial feet; and the rental paid to $192,955, which represents, at the rate of 4 per cent, a capital, in round figures, of $4,824,000.

During this period of ten years, 129,186 superficial feet were added to the area of government-owned buildings. West block extension gave an additional 13,885 superficial feet; the Victoria Memorial Museum, 110,209 superficial feet; and the building at the corner of Queen and O'Connor streets—purchased in 1904, provides, in addition to the workshops, office accommodation to the extent of 5,092 superficial feet.

Adding the workshops and the West block addition to the 1905-06 accommodation; and the Museum to the 1910-11 accommodation, the grand total of increased accommodation, during these years, is as follows:—

FLOOR AREA.

—	1900-01.	1905-06.	1910-11.
Rented buildings	38,970 sup. ft.	132,685 sup. ft.	365,221 sup. ft.
Government-owned buildings		18,977 "	129,186 "
Totals	38,970 sup. ft.	151,662 sup. ft.	494,407 sup. ft.

Bringing this down to date, October, 1912, the area of rented buildings amounts to *402,986 superficial feet,* and the additional area provided in government-owned buildings to *164,502 superficial feet,* a total of *567,486 superficial feet.*

The area expropriated, has been divided into four blocks, each of which has been placed in charge of a rental agent, whose duty it is to look after the property for the government; to rent and collect rents; pass upon any repairs applied for by tenants, and, generally, to manage these properties in the interest of the government along the lines followed by private landlords. Three valuators were appointed, to examine thoroughly and report on the value of each parcel of property; and, a purchasing agent, to take up with the owners of the various properties, or their legal representatives, the matter of purchase; and negotiate with them for the acquisition of their holdings at a fair value.

In view of the great importance of the work to be undertaken, it was deemed advisable, in determining the size and location of the buildings on the site, to secure the services of two landscape architects of repute, and obtain from them a full report, with plans, describing a scheme of buildings, walks and driveways. Mr. Frederick G. Todd, Landscape Architect of Montreal, P.Q., and Mr. Edward White, Landscape Architect of London, England, were retained for this purpose.

After careful consideration of the landscape architects' reports, the intention is to select a building, or buildings, which will furnish office accommodation for the departments, for, say, the next ten years; after which it will be a matter for consideration whether a Board of Assessors is to be chosen to draw up, and determine on a set of conditions upon which the department can hold an architectural competition, or some other method be adopted, to secure suitable designs.

National Art Gallery.—Before leaving the subject of public buildings, I would like to make a brief reference to the National Art Gallery, which is now established in the eastern wing of the Victoria Memorial Museum building. The continued devotion of the members of the Advisory Art Council, ably seconded by the Director, to the welfare and improvement of the gallery, has resulted—to a marked degree—in the revival of interest in art and sculpture, throughout Canada. The attendance which was first registered on Ju[illegible] last, rose steadily within six weeks from 356 to 1,004, demonstrating by the steady gain in numbers the growing appreciation of the National Gallery as a pleasure-giving and instructive institution. A neatly illustrated catalogue was issued, and has been on sale at twenty-five cents per copy since July 9; the first six weeks' sales amounting to some 116 copies. A second edition of the catalogue, revised and enlarged, is now in the printer's hands.

A notable picture has recently been purchased by the Advisory Art Council: 'The Green Feather,' by Mrs. Laura Knight. It is a lifesize picture of a woman in full sunlight, and is a masterly achievement by one of the foremost woman painters in England. The National Gallery has also received the loan, for one year, from the French government, of the oil painting, by Gudin, entitled 'Jacques Cartier discovering the River St. Lawrence, 1535.'

The Canadian National Exhibition of Toronto, Ont., was visited by the Advisory Art Council and the Director. The Art Section, which has been steadily improved during the last few years, is now an excellent exhibition of modern pictures; and the Advisory Art Council made purchases for the National Gallery from the British, French, American and Canadian, and black and white sections.

DREDGING.

The expansion of the work of this branch, has been most marked during the fiscal period under review, as is exemplified by the large number of places where improvements, by dredging, were carried out.

The total expenditure under this heading was $5,029,147.43, and work was performed at the following places:—

Nova Scotia.—Alder Point, Digby, East River (Pictou), Grand Etang, Lahave river, Larry's river, Lunenburg, Mahone Bay, Petit de Grat, St. Ann's, Sydney, West Bay and Yarmouth;

Prince Edward Island.—Charlottetown, Grand River, Higgins Shore and Mount Stewart;

New Brunswick.—Bathurst, Campbellton, Cape Tormentine, Caraquet, Dalhousie, Dipper Harbour, Miramichi Bay, Miramichi river, St. Andrews, St. John, St. Stephen, Shediac, Traverse and Welshpool;

Quebec.—Amherst, Berthierville, Green Shoals (Ottawa), Ile Perrot, Montmagny, Nicolet, Quebec, Rivière St. Charles, Rivière Batiscan, Rivière Bonaventure, Rivière du Loup, Rivière Richelieu, Rivière Saguenay, Rvière St. François, Rivière St. Maurice, St. François du Lac and Verdun.

Ontario.—Big Island, Byng Inlet, Cameron Narrows (Georgian Bay), Collins Inlet, Fort William, Goderich, Hamilton, Kincardine, Kingsville, Midland, Penetanguishene, Picnic Island (Georgian Bay), Port Arthur, Port Burwell, Port Elgin, Port Hope, Port Stanley, Rainy River, River St. Lawrence (near Brockville), River Thames, Telegraph Island (near Trenton), To[illegible] harbour, Waubaushene and Wiarton;

Manitoba.—Lister's Rapids (Winnipeg river), Red river and Selkirk;

British Columbia.—Alberni, Columbia river, Fraser river, Kootenay lakes, New Westminster, Okanagan river, Skeena river, Thompson river, Vancouver and Victoria.

SURVEYS.

The only river survey of moment which the department has in hand, is that of the North Saskatchewan river, referred to in last year's report; its purpose being to determine the feasibility and cost of providing shallow-draught navigation from Edmonton to Lake Winnipeg. The Engineer in charge, Mr. L. R. Voligny, reports that surveys this year were confined to the upper part of the river, and hydraulic investigations made on the principal tributaries in the Foot hills. The usual records of water gaugings were kept at fixed stations from Rocky Mountain House to Le Pas. Two hundred and forty-one miles of river were surveyed and sounded in the reach below Edmonton. Two hundred and thirty-four miles still remain unsurveyed to reach Prince Albert. Another seasons's work will be required to finish this work. Special surveys, covering forty-nine and one-half miles of river were also made in places where rapids occur, and four foot contours taken of both banks. These surveys include nine series of rapids, which cannot be navigated at low water. There are, however, no steep pitches in any of them; the greatest fall being three and one-half feet in two thousand, in the Crooked rapids. This is the strongest rapid of the series. Locks and dams will not be required below Edmonton; all that is needed to render the rapids navigable is the removal of boulders from the bed of the channel, and the building of wing dams at convenient places.

At Edmonton, and for one hundred and eighty-six miles below, the river is narrow, and a good channel is found almost the entire distance. Improvements here will cost considerably less than in other reaches, either above or below. An approximate estimate of $2,500 per mile for this reach, represents a sum of $465,000 as the cost of improving same.

From Vermilion river to Prince Albert, a distance of two hundred and eighty-nine miles, there are no rapids, but shifting sand bars exist practically throughout the entire reach. The river here is wide everywhere, varying from one thousand feet to three-quarters of a mile, and contains numerous islands and several channels This will be the most difficult part to improve. Works, such as levees, dams, training piers, shore protection, &c., will be needed to confine the water to one channel and prevent the formation of sand bars. Considerable dredging will have to be done to straighten and deepen the channel in places where these improvements will be permanent. The cost of the works in this reach is estimated at $2,023,000.

From Prince Albert to Le Pas, the estimated cost of works is $1,500,000; and from Le Pas to Lake Winnipeg, Mr. Forward, in his report of a survey made in 1909, estimates that $3,197,000 will be required to improve the lower part of the river. The total cost of creating a navigable waterway from Edmonton to Lake Winnipeg will therefore amount to $7,185,000. This sum being made up as follows:—

Reach-	Miles.	Estimated cost per mile.	Total cost.
		$	$
Edmonton to Vermilion River	186	2,500 00	465,000 00
Vermilion River to Prince Albert	289	7,000 00	2,023,000 00
Prince Albert to Le Pas	300	5,000 00	1,500,000 00
Le Pas to Lake Winnipeg	139	23,000 00	3,197,000 00
	714		7,185,000 00

The first section of the river to be improved, is the reach from Edmonton to Pakan. This would give seventy-two miles of navigation through a well-settled section of country where steamboat traffic would likely prove profitable from the beginning. The improvements of this reach are estimated at $180,000.

Even should this interprovincial waterway, extending over seven hundred miles in length, cost—when it comes to be constructed, several million dollars more than estimated by the Engineer in charge, its existence—not alone from the point of view of actual traffic which may be carried over its waters, but as a regulator of railway rates—would be more than amply justified. A casual glance at the map of western Canada will suffice to emphasize its strategic position, parallelling, as it may be said to do, the three great transcontinental lines of railway.

In conclusion, I beg to express my deep appreciation of the assistance given me by the officers and clerks of the department, in carrying on the very important works entrusted to them and to myself, during the year under review.

I have the honour to be, Sir,
Your obedient servant,

J. B. HUNTER,
Deputy Minister.

PART II

REPORT OF THE CHIEF ACCOUNTANT

FOR THE

FISCAL YEAR ENDED MARCH 31

1912

DEPARTMENT OF PUBLIC WORKS, CANADA,
ACCOUNTANT'S OFFICE,
OTTAWA, 11th October, 1912.

R. C. DESROCHERS, Esq.,
Secretary,
Department of Public Works,
Ottawa.

SIR,—I beg to submit the report upon the expenditure made by this Department during the fiscal year ended 31st March, 1912.

As in previous years, the report takes the form of three tabular statements, as follows:

Statement A, showing the expenditures upon each work under the several heads of (1) construction and improvements, (2) repairs, (3) staff and maintenance. In treating of public buildings, as it would be cumbersome to give the cost of maintenance in detail in this statement, that expenditure is condensed into one item, for each province, the fuller detail being reserved for Statement B.

Statement B, showing separately for each building the cost of rent, salaries, heating, lighting and water.

Statement C, showing amounts advanced by Government for the construction of certain works of a semi-public character, under statutory authority and after inspection by officers of this Department. There were no transactions of this nature during 1911-12, and the statement is only inserted to preserve the continuity of the report from year to year.

The total expenditure during the fiscal year was $13,928,666.87, an increase of $2,121,631.45 over the expenditure of the preceding year.

The volume of work passed through the Accountant's Branch during 1910-11 may be briefly indicated as follows:—

	Number of cheques issued.	Amount.
		$ cts.
Direct payment by Departmental cheque—		
Issued by head office, Ottawa	64,629	5,058,749 58
" agencies	16,993	1,322,862 67
Total Departmental cheques	81,622	6,381,612 25
Payment by Receiver General's cheque, after applications issued by this office, upon the Auditor General (contract work, etc.)	1,419	7,547,054 62
Total expenditure	.....	13,928,666 87

I have the honour to be, sir,

Your obedient servant,

A. G. KINGSTON,
Chief Accountant and Controller.

STATEMENT OF EXPENDITURE

DURING

FISCAL YEAR ENDED MARCH 31, 1912.

STATEMENT A, showing the Amounts Expended by the Department of Public Works of Canada during the Fiscal Year ending March 31, 1912.

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS.	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia.				
Amherst post office, &c	142 43	185 42		327 85
Annapolis "		796 23		796 23
Antigonish "	25 00	212 11		237 11
Arichat "		157 17		157 17
Baddeck "	763 68	47 26		810 94
Bridgewater "	10 00	44 50		54 50
Canso "	35 00	735 52		770 52
Dartmouth "		155 30		155 30
Digby "	11 00	313 82		324 82
Glace Bay "	363 10	54 60		417 70
Guysboro "		342 45		342 45
Halifax appraiser's office		51 25		51 25
" Asst. Receiver General's office	25 00	14 99		39 99
" cattle quarantine station		126 00		126 00
" custom house	4 50	1,935 87		1,940 37
" " power for machinery			255 20	255 20
" barracks—Wellington		1 00		1 00
" detention building	1,908 52	91 79		2,000 31
" Immigration building		1,826 98		1,826 98
" Lawlor's Island quarantine station		1,159 24		1,159 24
" post office	28,155 26	882 82		29,038 08
" " power for machinery			103 30	103 30
Inverness post office, &c	2 00	327 01		329 01
Kentville "	37 18	82 06		119 24
Liverpool "	75 25	220 02		295 27
Lunenburg "	2,924 55	24 97		2,949 52
Nappan experimental farm		668 10		668 10
New Glasgow post office, &c	10 15	132 97		143 12
North Sydney "	7 30	336 92		344 22
" district engineer's office (Y. M. C. A. building)		741 25		741 25
North Sydney immigration shed	2.514 31	76 40		2,590 71
Parrsboro post office, &c	5,082 54			5,082 54
Pictou public building	15 00	535 73		550 73
Shelburne public building	3,117 00	173 54		3,290 54
Springhill "		83 53		83 53
Stellarton "	1 25			1 25
Sydney "	446 08	330 65		776 73
Sydney Mines post office, &c	6 50	49 73		56 23
Truro post office, &c	21 60	502 21		523 81
Westville "	5 71	166 27		171 98
Weymouth custom house	353 15			353 15
Windsor post office, &c	41 00	307 67		348 67
Wolfville "	17,064 61			17,064 61
Yarmouth "	5,629 17	121 23		5,750 40
Heating, lighting, water, &c., for all buildings in Nova Scotia (for details see page 39)			46,192 46	46,192 46
Totals, Nova Scotia	68,797 84	14,014 58	46,550 96	129,363 38
Prince Edward Island.				
Charlottetown addition to Dominion building	885 00	1,059 99		1,944 99
Georgetown post office, &c		389 43		389 43
Montague "	5 50	16 76		22 26
Souris "	210 00	343 31		553 31

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS—*Continued.*	$ cts.	$ cts.	$ cts.	$ cts.
Prince Edward Island—Concluded.				
Summerside armoury	5,969 50			5,969 50
" post office, &c.	430 15	108 62		538 77
Tignish post office, &c	5,205 22			5,205 22
Heating, lighting, water, &c., for all buildings in Prince Edward Island (for details see page 39)			8,852 15	8,852 15
Totals, Prince Edward Island	12,705 37	1,918 11	8,852 15	23,475 63
New Brunswick.				
Bathurst post office, &c	33 00	66 25		99 25
Campbellton post office, &c.	27,820 40	134 87		27,955 27
Chatham armoury		449 64		449 64
" post office, &c. (enlargement)	230 01	301 70		531 71
" quarantine station		192 42		192 42
Clair immigration inspector's office (Victoria Co.)		58 84		58 84
Dalhousie post office, &c		52 71		52 71
Edmundston immigration building		50 00		50 00
Fairville post office, &c	13,244 50			13,244 50
Fredericton "	1,834 78	230 75		2,065 53
Grand Falls "	16,188 27			16,188 27
Hartland "	14,968 61			14,968 61
Hillsborough "	12,950 56			12,950 56
McAdam Junction custom house		5 89		5 89
Marysville post office		456 05		456 05
Moncton armoury	105 89			105 89
" post office, &c	2,237 00	81 58		2,318 58
Newcastle "	3 50	365 07		368 57
Richibucto "	15 00	403 08		418 08
St. John custom house	27 00	2,329 09		2,356 09
" cattle quarantine station		592 62		592 62
" drill hall.	81,672 14			81,672 14
" I.R.C. Ry station (trucks)	100 89			100 89
" detention hospital	20,150 00	710 34		20,860 34
" engineer's office		56 85		56 85
" immigrant building		879 62		879 62
" Partridge Island quarantine station		598 16	1,474 84	2,073 00
" post office	1,267 17	2,008 15		3,275 32
" " (site for new)	68,635 40			68,635 40
" savings bank		5 35		5 35
" West post office (Carleton)	4 50	16 18		20 68
St. Stephens immigrant building		144 34		144 34
" post office		712 92		712 92
Sussex armoury	586 54			586 54
" post office, &c		39 02		39 02
Tracadie Lazaretto	414 49	88 75		503 24
Woodstock post office, &c	44 64	266 92		311 56
Heating, lighting, water, &c., for all buildings in New Brunswick (for details see page 40)			45,461 77	45,461 77
Totals, New Brunswick	262,534 29	11,297 16	46,936 61	320,768 06
Quebec.				
Acton Vale post office, &c		295 05		295 05
Arthabaskaville "	15,534 74			15,534 74
Aylmer post office, &c	2,465 60	52 55		2,518 15
Beauce Junction post office, &c	77 44			77 44
Berthierville post office, &c	0 95	174 56		175 51
Black Lake " "	14 98			14 98
Buckingham " "		79 70		79 70
Cap Rouge Expl. Farm		957 45		957 45

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Constuction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS—*Continued.*	$ cts.	$ cts.	$ cts.	$ cts.
Quebec—Continued.				
Chicoutimi post office, &c	511 93	175 15		687 08
Coaticook " "	14 45	22 38		36 83
Cookshire " "	75 00	133 07		208 07
Drummondville post office, &c		191 42		191 42
Dundee custom house		384 50		384 50
Farnham post office, &c	17 64	383 08		400 72
Fraserville armoury	5,174 69			5,174 69
" post office, &c	78 29	881 98		960 27
Granby post office, &c	15 98	186 47		202 45
Grosse Isle quarantine station, improvements	7,492 64			7,492 64
Hochelaga post office, &c	4 23	683 83		688 06
Hull " "		1,121 45		1,121 45
Iberville " "		119 47		119 47
Joliette " "	15 91	194 52		210 43
Knowlton Armoury		82 10		82 10
Lachine post office, &c	630 15	117 13		747 28
Lachute "	173 30	81 83		255 13
Laprairie "		20 95		20 95
L'Assomption "	82 45	60 45		142 90
Laurentides "	8 45			8 45
Levis armoury and gun shed	14,506 73			14,506 73
Levis post office, &c	123 85	683 84		807 69
Longueuil "		247 04		247 04
Louiseville "	74 66			74 66
Magog "	2 20	90 60		92 80
Maisonneuve "	8,531 61			8,531 61
Marieville "	13,133 18			13,133 18
Megantic "	14,101 81			14,101 81
Metapedia Ry. junction (mail trucks)	77 69			77 69
Montmagny post office, &c		203 03		203 03
Montreal custom house	25 00	2,166 68		2,191 68
" custom's express branch quarters		2,241 90		2,244 90
" engineer's office		73 25		73 25
" immigration office		729 22		729 22
" inland rev. "		1,480 13		1,480 13
" marine & fisheries agency	51 50	167 50		219 00
" new barracks	45 00			45 00
" exmg. warehouse	833 61	3,170 09		4,003 70
" " power for elevator			394 64	394 64
" new detention building	25,000 00			25,000 00
" Place Viger Ry. station (mail trucks)	15 60			15 60
" general post office	106,593 84	1,226 95		107,820 79
" " " power for elevator			2,391 10	2,391 10
" general post office formerly proposed pneumatic tube system—Final settlement for machinery, &c., proportion chargeable to Montreal	24,445 48			24,445 48
Montreal postal station "A" (Windsor station)	296 07	15 38		311 45
" postal station "B" (St. Catherines W)	338 00	734 92		1,072 92
" new postal station "B"	48 40			48 40
" postal station "C" (Amherst St.)	37,998 33	239 41		38,237 74
" " " "D" (Pte. St. Charles)		186 79		186 79
" " " "E" (St. Louis du Mile End)	3,587 89	271 62		3,859 51
" weights and measures office (Chambre de Commerce building)		22 50		22 50
Napierville post office, &c	127 61			127 61
Nicolet " "		112 86		112 86
Nomingue immigration building		23 60		23 60
Paspebiac custom house		8 75		8 75
Peribonka immigration building		8 01		8 01
Pierreville post office, &c		182 37		182 37
Plessisville " "		184 08		184 08
Quebec citadel, Gov. Gen. quarters		2,566 71		2,566 71
Quebec custom house	70,610 16	63 28		70,673 44

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS—*Continued.*	$ cts.	$ cts.	$ cts.	$ cts.
Quebec—Concluded.				
Quebec detention hospital		1,171 86		1,171 86
" new detention building in Savard Pk	1,030 55			1,030 55
" drill hall (extension)	527 00			527 00
" examining warehouse	1,459 42	996 62		2,456 04
" " " power for machinery			131 25	131 25
" Marine and Fisheries building		153 85		153 85
" military registry		105 00		105 00
" immigration building (Louise Embkmt)	5,758 50	2,306 10		8,064 60
" post office (enlargement)	317 82	1,249 14		1,566 96
" " power for machinery			693 75	693 75
" East, (St. Roch) post office	8 25	641 50		649 75
" " " " power for machinery			37 50	37 50
" St. Sauveur post office		7 50		7 50
Richmond post office, &c	5 05	188 48		193 53
Rigaud " "	15,118 05			15,118 05
Rimouski " "		271 46		271 46
Roberval immigration shed		86 55		86 55
" post office, &c	6,512 80			6,512 80
Rock Island post office, &c	5,183 96			5,183 96
Shawinigan post office, &c	8,266 62	328 75		8,595 37
Sherbrooke drill hall		8 00		8 00
" dist. engrs. office		8 00		8 00
" post office, &c	183 63	1,427 04		1,610 67
Sorel post office, &c		164 51		164 51
" ship yard		30 20		30 20
St. Casimir post office, &c	11 17			11 17
Ste. Flavie railway station (mail trucks)	77 19			77 19
St. Gabriel de Brandon post office		6 00		6 00
St. Henri post office, &c	4,816 01	25 96		4,841 97
St. Hyacinthe drill hall	319 53			319 53
" Inland Revenue office	23 00			23 00
" post office, &c	18 05	37 89		55 94
St. Jacques de l'Achigan post office, &c	80 30			80 30
St. Jerome post office, &c		405 39		405 39
St. John's custom house	20 50	110 00		130 50
" post office, &c	46 00	288 39		334 39
St. Lambert post office, &c	418 84			418 84
St. Regis Indian office and custom house		80 00		80 00
Ste. Therese post office, &c	19 00			19 00
Terrebonne " "	2 50	42 63		45 13
Thetford Mines post office	1,095 08	167 03		1,262 11
Three Rivers post office, &c	2,684 08	590 07		3,274 15
Tring Junction custom house	78 27			78 27
Valleyfield post office, &c		52 72		52 72
Victoriaville post office, &c	273 60	361 16		634 76
Weedon Station post office, &c	31 52			31 52
Westmount post office, &c	1,141 24	87 19		1,228 43
Heating, lighting, water, &c., for all buildings in Quebec (for details see page 41)			158,697 50	158,697 50
Totals, Quebec	408,484 57	34,901 59	162,345 74	605,731 90
OTTAWA BUILDINGS.				
Ottawa astronomical observatory	6,297 02			6,297 02
" " power for machinery			132 53	132 53
" cattle quarantine station		150 00		150 00
" experimental farm		26,800 93		26,800 93
" " tobacco curing station	4,992 51			4,992 51
" explosives testing station	11,684 70			11,684 70
" fuel testing building	92 86			92 86
" instrumental testing and standardizing building (Cliff street)	2,765 00			2,765 00

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
OTTAWA BUILDINGS—*Concluded:*	$ cts.	$ cts.	$ cts.	$ cts.
Ottawa Major's Hill Park	2,385 12		8,000 67	10,385 79
" Military Stores building	11,260 68			11,260 68
" National Art gallery	33,094 62		1,920 00	35,014 62
" Departmental Buildings :—				
" " " fire protection	6,577 93			6,577 93
" " " improvement in lavatories	6,678 92			6,678 92
" Eastern Departmental Block (addition)	126,514 06			126,514 06
" Langevin Block—new boilers	10,502 85			10,502 85
" New Departmental Buildings :—				
" Sussex street, $12,591.78				
" Egan estate, $250,050	262,941 78			262,941 78
" Wellington street west, $300				
" Old Museum building, Sussex street	14,243 85			14,243 85
" Printing Bureau (new boilers)	6,895 86			6,895 86
" " " fire escape	1,272 00			1,272 00
" Victoria Memorial Museum	138,622 35			138,622 35
" Parliament Buildings—improvements	9,998 94			9,998 94
" Parliament grounds	20,004 18		13,855 67	33,859 85
" " " post office	4,074 98			4,074 98
" " " power for elevator			492 75	492 75
" Rideau Hall	54,768 50	40,648 82	37,627 41	133,044 73
" " grounds, $11,973.59				
" " snow, $1,302.75				
" " fuel and light, $8,500.00			22,436 34	22,436 34
" " watchman, $660.00				
" generally :—Steel fittings	33,831 55			33,831 55
" " Power for elevators			10,501 21	10,501 21
" " Removal of snow			3,894 86	3,894 86
" " Repairs and furniture		225,119 68		225,119 68
" " Telephone service			19,001 27	19,001 27
" Government share of cost of pavements, sidewalks, &c., laid by municipal authorities in front of various buildings.	9,610 80			9,610 80
Heating, lighting, water, &c., for all buildings in Ottawa (for details, *see* page 44)			398,930 76	398,930 76
Totals, Ottawa buildings	779,111 06	292,719 43	516,793 47	1,588,623 96
Ontario.				
Excluding Ottawa buildings.				
Alexandria post office, &c		61 63		61 63
Almonte "		675 73		675 73
Amherstburg "	19 80	35 28		55 08
Arnprior "	0 80	134 75		135 55
Athens "	1,535 45			1,535 45
Aurora "	6 46			6 46
Aylmer (west) "	12 83			12 83
Barrie "	10 50	82 26		92 76
Belleville "	421 28	227 10		648 38
Berlin "	44 25	192 50		236 75
Bowmanville "	0 60	109 68		110 28
Bracebridge "	4,062 71			4,062 71
Brampton "	1,194 92	16 05		1,210 97
Brantford drill hall and armoury	842 40	250 00		1,092 40
" post office, &c	48 05	277 21		325 26
Bridgeburg cattle quarantine station		549 00		549 00
" immigration building		37 00		37 00
" post office, &c		29 82		29 82
Brockville "	255 20	373 36		628 56
Campbellford "	14 35			14 35
Carleton Place "		20 25		20 25
Cayuga post office &c		75 69		75 69
Chatham "	0 70	352 40		353 10
Chesley "	517 60			517 60

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS—*Continued.*	$ cts	$ cts.	$ cts.	$ cts.
Ontario—Continued.				
Clinton post office, &c	13 55	292 92		306 47
Cobourg "	12 73	104 18		116 91
Colborne "		30		30
Cornwall "	4 85	59 23		64 08
Deseronto "		26 60		26 60
Dresden "	5,614 84			5,614 84
Dundas "	7,309 01	6 75		7,315 76
Durham "	13 17			13 17
Eganville "	2,009 05			2,009 05
Elora "	12,158 60			12,158 60
Elmira "	7 96			7 96
Essex "	6,657 05			6,657 05
Fergus "	14,000 49			14,000 49
Fort Frances Imm. Bldg		19 10		19 10
" Custom House	155 74			155 74
Fort William post office, &	1,722 15	330 43		2,052 58
Galt post office, &c	516 42	300 74		817 16
Gananoque post office, (addition)	121 38	36 53		157 91
" Custom House		828 31		828 31
Glencoe post office, &c		88 20		88 20
Goderich " (addition)	7,998 02	164 65		8,162 67
Guelph armoury		16 16		16 16
Guelph post office. &c	52 05	258 56		310 61
Hamilton Custom House		643 92		643 92
" Drill Hall		126 69		126 69
" Grand Trunk Ry. Station (mail trucks)	159 00			159 00
" Post office, &c	5,463 30	568 40		6,031 70
" power for machinery			33 59	33 59
" postal station "B"		19 95		19 95
Hanover post office, &c	2,378 34			2,378 34
Harriston "	14,263 54			14,263 54
Hawkesbury "		31 86		31 86
Ingersoll "		27 69		27 69
Kemptville "	10 70			10 70
Kenora "	32 62	90 40		123 02
Kincardine "	0 25	52 35		52 60
Kingston Custom House		2,671 90		2,671 90
" Inland Rev. office		219 90		219 90
" Post office, &c	14,129 54	1,001 10		15,130 64
" Ordnance Stores Bdg		243 70		243 70
" R.M.C. additional dormitory accommodation for cadets	763 58			763 58
Kingsville post office, &c	7 26			7 26
Leamington "	4,696 76	75 25		4,772 01
Lindsay "	3,100 03	173 48		3,273 51
Listowel "	18,077 92			18,077 92
London Custom House		1,027,84		1,027 87
" Military Buildings	2,217 10			2,217 10
" post office, &c	488 20	463 43		951 63
Markdale post office, &c	15 00			15 00
Markham "	17 79	20 50		38 29
Maxville "	5 10			5 10
Midland "	15 02			15 02
Milverton "	1,663 18			1,663 18
Mitchell "	14,527 10			14,527 10
Mount Forest Pub. Bldg	15,918 00			15,918 00
Napanee post office, &c	5 10	117 86		122 96
Niagara Falls armoury	34,396 90			34,396 90
" " immigration building		24 00		24 00
" " post office, &c	4,022 98	177 09		4,200 07
North Bay post office, &c		517 51		517 51
Orangeville post office, &c	18 25	452 74		470 99
Orillia pos toffice, &c		148 85		148 85

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS—*Continued.*	$ cts.	$ cts.	$ cts.	$ cts.
Ontario—Continned,				
Oshawa post office, &c	25	605 12		605 37
Owen Sound post office, &c	486 81	734 33		1,221 14
Paris post office, &c		50 00		50 00
Parkhill post office, &c		177 70		177 70
Parry Sound marine and fishery agency		4 50		4 50
Pembroke post office, &c	62 29	167 09		229 38
Perth post office, &c	8 05			8 05
Peterboro custom house		257 43		257 43
" post office, addition	9,130 09	144 99		9,275 08
Petrolea post office, &c		142 07		142 07
Picton "	4 43	103 76		108 19
Port Arthur armoury	889 23			889 23
" immigration building		48 00		48 00
" post office, addition	125 15	81 55		206 70
Port Colborne post office, &c	11 45	36 35		47 80
Port Hope post office, &c	80 99	30 05		111 04
Port Perry post office, &c	1,875 42			1,875 42
Prescott public buildings	10 80	951 51		962 31
Renfrew post office, &c	161 71	41 06		202 77
Sandwich post office, &c		29 15		29 15
Sarnia armoury	1,129 52	99 75		1,229 27
" post office, &c		393 14		393 14
Sault Ste. Marie post office, &c	290 72	233 04		523 76
Seaforth post office, &c	10,238 47			10,238 47
Simcoe post office, &c	26 50	43 39		69 89
Smith Falls post office, &c	54 40	156 77		211 17
Stratford armoury		59 65		59 65
" post office, &c	391 92	587 88		979 80
Strathroy post office, &c		33 87		33 87
St. Catharines "	26 00	105 17		131 17
St. Mary's "	130 25	178 80		309 05
St. Thomas "	2 15	198 15		200 30
Sudbury "	72 48			72 48
Tilbury "	901 28			901 28
Tillsonburg "	13,509 49			13,509 49
Toronto custom house	15 10	571 23		586 33
" " power for elevator			165 36	165 36
" district engr's. office, Confederat. Life Bldg		60 42		60 42
" examining wharehouse	244 03	645 59		889 62
" immigrant office, (Union Station)		253 78		253 78
" inland revenue office		194 44		194 44
" meteorological observatory	205 00	682 55		887 55
" post office	26,636 04	1,223 06		27,859 10
Toronto post office, power for elevator			505 73	505 73
" post office, formerly proposed pneumatic tube system. Final settlement for machinery, proportion chargeable to Toronto	24,445 48			24,445 48
" post office, garage for motor trucks	9,912 22	443 88		10,356 10
" postal station "A"	526 42	361 37		887 79
" " " power for machinery			228 52	228 52
" " " "B"	1,162 10	184 74		1,346 84
" " " "C"	576 23	364 30		940 53
" " " "D"	122 80	161 47		284 27
" " " "E"	295 43	471 76		767 19
" " " "F"	411 43	106 69		518 12
" " " "G"	301 93	42 82		344 75
" " " temporary (exhibition)		34 15		34 15
Trenton post office, &c		191 70		191 70
Tweed Ry. station (mail trucks)	98 21			98 21
Uxbridge post office, &c	7,264 66			7,264 66
Walkerton post office, &c		792 62		792 62
Wallaceburg post office	371 62			371 62
Waterloo " "	21,717 31			21,717 31

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS.—*Continued.*	$ cts.	$ cts.	$ cts.	$ cts.
Ontario—Continued.				
Welland post office		78 56		78 56
Whitby " "	337 22	10 70		347 92
Wiarton " "	1,994 47			1,994 47
Windsor " "	67 47	746 67		814 14
Windsor immigration building		30 77		30 77
Wingham post office, &c	1 96	11 85		13 81
Woodstock post office, &c	32 45	129 56		162 01
Heating, lighting, water, &c., for all buildings in Ontario, exclusive of Ottawa (for details see page 43)			164,409 83	164,409 83
Totals, Ontario (exclusive of Ottawa)	340,106 95	28,417 73	165,343 03	533,867 71
Manitoba.				
Brandon experimental farm		2,065 62		2,065 62
" immigration shed		51 44		51 44
" post office—addition	1,117 15	830 98		1,948 13
Dauphin immigration building		178 00		178 00
" post office, &c	499 01	382 15		881 16
Elmwood " "		15 00		15 00
Emerson cattle quarantine station		65 50		65 50
" immigration building	1,716 65	20 00		1,736 65
" post office, &c		15 80		15 80
Minnedosa public building (with armoury accommodation)	5,551 85			5,551 85
Morden post office, &c	2,006 40			2,006 40
Neepawa post office, &c	75	347 45		348 20
Portage La Prairie post office	18,144 25	197 79		18,342 04
St. Boniface post office, &c	92 90	907 95		1,000 85
Selkirk " " "		194 15		194 15
Souris " " "	17,312 82			17,312 82
Transcona		681 00		681 00
Winnipeg Armoury (Old Lands Office)		1,173 98		1,173 98
" Canadian Northern Station (mail trucks)	223 76			223 76
" District Engineer's Office		9 80		9 80
" Examining Warehouse		113 25		113 25
" Grain Exhibition Bldg. (Imm. Bldg. no. 5.)		214 00		214 00
" New Exmg. Warehouse	1,165 80	704 72		1,870 52
" " " power for machinery			292 56	292 56
" Immigration Building		2,315 61		2,315 61
" " " power for machinery			63 44	63 44
" Post Office Old (Custom House)	22,065 15	1,055 72		23,120 87
" " " power for machinery			95 82	95 82
" " New	6,105 46	3,127 95		9,233 41
" " " power for machinery			809 03	809 03
" Postal Station "B"		154 97		154 97
" " " "A" north of C. P. R. track	63 75	1 25		65 00
" Railway Commissioner's office		202 47		202 47
Heating lighting water &c. for all buildings in Manitoba (for details see page 44)			68,109 00	68,109 00
Totals, Manitoba	76,065 70	15,026 55	69,369 85	160,462 10
Saskatchewan and Alberta				
Athabaska Immigration Building		19 00		19 00
Battleford Immigration Building		45 00		45 00
" Dominion Lands Office	21 78	109 25		131 03
" Public Building	30,923 82			30,923 82
Calgary Examining Warehouse	273 35	220 00		493 35
" Express Custom House		133 67		133 67
" Immigration Building	208 78	1,863 65		2,072 43

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.
Saskatchewan and Alberta—Concluded.				
Calgary Gas and Electric Inspectors Office	3,851 75			3,851 75
" " " power for machinery			258 66	258 66
Calgary Grain Inspection Shed	698 64			698 64
" Irrigation Commissionner's Office		493 91		493 91
" Inland Revenue Office		252 20		252 20
" New Post Office	48 75			48 75
" Engineer's Office		18 53		18 53
" Rating Stn. for Geodetic Survey	4,649 47			4,649 47
Camrose Post Office &c	8,045 50			8,045 50
Castor Immigrant Building	2,975 00	129 33		3,104 33
Edmonton Dominion Lands Office &c	35 60	172 13		207 13
" Inland Revenue Office		100 10		100 10
" Immigrant Building		149 59		149 59
" New Drill Hall	75 00			75 00
" Post Office &c	10,749 67	240 81		10,990 48
" " power for machinery			611 70	611 70
Edson Immigrant Building	1,146 81	184 48		1,331 29
Entwhistle " "	823 65	111 76		935 41
Estevan Post Office &c	21 20	664 77		685 97
Gravelbourg Telegraph Office &c	2,189 30			2,189 30
Grouard Dominion Lands Office	241 95			241 95
Gull La ke ImmigrantBuilding		17 90		17 90
High River Armoury		6 00		6 00
Humboldt Dominion Lands Office	30 26			30 26
" Post Office &c	7,085 63			7,085 63
Indian Head Experimental Farm		1,409 24		1,409 24
" " Forestry Station		135 00		135 00
Irvine immigrant building		35 00		35 00
Kerr-Robert immigration building	2,682 95			2,682 95
Lacombe experimental farm		339 56		339 56
Lethbridge custom house and Dominion lands office	1,716 72	194 00		1,910 72
" experimental farm		1,519 54		1,519 54
" immigrant building	101 71	128 95		230 66
" post office, &c	521 37	270 28		791 65
" new public building	10,302 27			10,302 27
Lloydminster immigrant building		6 00		6 00
" post office, &c	493 57			493 57
Macleod custom house	100 41	60 99		161 40
Maple Creek post office	25 00	218 07		243 07
" immigrant building		105 20		105 20
Medicine Hat Dominion lands office		267 05		267 05
" post office, &c	266 04	909 06		1,175 10
Melfort post office, &c	314 52			314 52
Moosejaw Dominion lands office	21 47	67 65		89 12
" immigrant building		586 84		586 84
" post office, &c	1,326 07			1,326 07
" new public building	466 81			466 81
North Battleford immigrant shed		3 80		3 80
" post office, &c	60 62			60 62
North Portal cattle quarantine station	1,572 48			1,572 48
Pendant d'Oreille cattle quarantine station	776 45			776 45
Prince Albert immigrant building		28 05		28 05
" penitentiary	12,809 89			12,809 89
" post office	178 08	222 86		400 94
Red Deer public building		634 87		634 87
Regina armoury and drill hall	276 29			276 29
" Dominion lands office		102 04		102 04
" immigrant building		278 07		278 07
" public building (to complete)	6,341 82	669 60		7,011 42
Rosthern experimental farm		280 58		280 58
Saskatoon immigration building		168 65		168 65
" post office, &c	20 00	624 50		644 50

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
PUBLIC BUILDINGS—*Continued.*	$ cts.	$ cts.	$ cts.	$ cts.
Saskatchewan and Alberta—Continued.				
Saskatoon purchase of lands for public buildings	47,584 78			47,584 78
Strathcona armoury	14,160 74			14,160 74
" public building	39,071 30			39,071 30
" immigrant building		125 00		125 00
Swift Current Dominion lands office	22 51	54 25		76 76
Tisdale immigrant building	3,352 98			3,352 98
Vegreville public building	4,890 00			4,890 00
Viking immigrant building	2,200 00	40 00		2,240 00
Wainwright immigrant building		35 75		35 75
Wetaskiwin post office, &c	9,607 03			9,607 03
Weyburn post office, &c	518 32			518 32
Wilkie immigrant building		54 00		54 00
Willow Creek cattle quarantine station	2,091 00			2,091 00
Yorkton immigrant building		57 95		57 95
" post office, &c	38 07	167 15		205 22
Heating, lighting, water, &c., for all buildings in Saskatchewan and Alberta (for details see page 45).			82,748 38	82,748 38
Totals, Saskatchewan and Alberta	238,906 58	14,731 63	83,618 74	336,356 95
British Columbia.				
Agassiz experimental farm		11,253 11		11,253 11
" cattle quarantine station	2,185 42			2,185 42
Atlin post office, &c		969 09		969 09
Banff Dominion parks buildings	194 40			194 40
Chamainus custom house	289 41			289 41
Chilliwack post office, &c	2,352 88			2,352 88
Cranbrook post office, &c	25,005 50			25,005 50
Cumberland post office	5 50	80 00		85 50
Fernie drill hall	238 88			238 88
" post office, &c	4,426 06	131 43		4,557 49
Grand Forks public building	13,598 55	2 80		13,601 35
Grand Prairie lands office		378 30		378 30
Kamloops post office, &c	87 80	131 39		219 19
Ladysmith post office, &c		18 60		18 60
Nanaimo post office, &c., extension	17,296 73	106 30		17,403 03
Nelson post office—addition	14,034 50	469 31		14,503 81
New Westminster fisheries, and Indian offices		913 00		913 00
" post office, &c	1,498 81	505 36		2.004 17
North Vancouver "	1,982 84			1,982 84
Prince Rupert public buildings, &c	1,189 35	125 74		1,315 09
" " quarantine station	17,585 60			17,585 60
Quesnel post office—addition	106 50			106 50
Revelstoke post office, &c	655 45	75 55		731 00
Rossland post office, &c		162 25		162 25
Vancouver Assay and Inland revenue office	49.902 34	941 44		50,843 78
" Chinese hospital		108 00		108 00
" Drill hall	1,448 38			1,448 38
" Canadian Northern Ry. station (mail trucks)	170 88			170 88
" exmg. warehouse	50,008 20	216 88		50,225 08
" post office (new)	21,095 14			21,095 14
" " " power for machinery			470 85	470 85
Vernon post office &c	20,028 61			20,028 61
Victoria immigration detention building		1,261 07		1,261 07
" post office (new)	9,709 81	2,060 38		11,770 19
" " " power for machinery			389 41	389 41
" " (old)	125 00	1,688 32		1,813 32
" Marine and Indian office, formerly old custom house		692 36		696 32
" Marine and Indian office, formerly old custom house, power for machinery			15 81	15 81

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs and Furniture.	Staff and maintenance.	Total.
PUBLIC BUILDINGS—*Concluded.*	$ cts.	$ cts.	$ cts.	$ cts.
British Columbia—Concluded.				
Williams Head quarantine station	1,600 82	165 00		1,765 82
Heating, lighting, water, &c., for all buildings in British Columbia (for details see page 46)			59,736 47	59,736 47
Totals, British Columbia	256,823 36	22,459 64	60,612 54	339,895 54
Yukon Territory.				
Carcross custom house	116 40			116 40
Dawson Commissioner's residence	529 90			529 90
Whitehorse post office, &c	3,728 70			3,728 70
Heating, lighting, water, &c., for all buildings in Yukon Territory			56,764 13	56,764 13
Totals, Yukon Territory,	4,375 00		56,764 13	61,139 13
Public Buildings Generally.				
Advertising coal tenders Dominion buildings			1,628 71	1,628 71
Printing, stationery, instruments, travelling, &c.			15,103 95	15,103 95
Salaries of resident Clerks of Works			24,909 92	24,909 92
Totals, public buildings generally			41,642 58	41,642 58
HARBOURS AND RIVERS. Dredging.				
Nova Scotia.				
Abbott's Harbour (Yarmouth Co.)	3,696 47			3,696 47
Alder Point (Cape Breton Co)	7,052 00			7,052 00
Amaguadees Pond (Castle Bay) extension of wharf		208 32		208 32
Amherst wharf		32 52		32 52
Anderson's Cove breakwater		3,498 36		3,498 36
Annapolis, ice piers		19,737 29		19,737 29
Argyle Sound, wharf		291 63		291 63
Arichat, deep water wharf		6,894 41		6,894 41
Arisaig	2,387 86	415 32		2,803 18
Aspy-Bay North Harbour, channel at Dingwall		38 43		38 43
Baddeck wharf (warehouse)		446 50		446 50
Baddeck and Middle rivers—				
Baddeck River $233 53				
Middle River 903 87		1,137 40		1,137 40
Bailey's Brook, breakwater			247 95	247 95
Barrington's Cove (*see* Sydney Mines).				
Bass River, wharf			709 33	709 33
Battery Point, breakwater		2,809 87		2,809 87
Bayfield, breakwater		23 59		23 59
Benoit's Cove	998 03			998 03
Black Pt. (Grand River) breakwater		7,479 79		7,479 79
Blue Rocks Island (Co. Lunenburg), breakwater		8,207 66		8,207 66
Blue Rocks (Co. Antigonish), breakwater			249 62	249 62
Blondin (*see* Whitewater).				
Breen's Pt., breakwater		720 70		720 70
Breton Cove, protection work			246 53	246 53
Bridgewater	294 19			294 19
Brooklyn, breakwater		1,666 78		1,666 78
" repairs to wharf			706 53	706 53

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia—Continued.					
Brulé, wharf		303 90			303 90
Burke's Head, breakwater		17,180 33			17,180 33
Burlington, wharf			330 19		330 91
Canada Creek, east breakwater			618 72		618 72
Canning, completion and extension of wharf		1,478 75			1,478 75
Cape Dauphin, breakwater		16 35			16 35
Cape Negro, Swain's Cove, wharf		558 06			558 06
Cape Rouge, breakwater		268 69			268 69
Cape Island, wharf (see Centreville).					
Caribou Island, causeway		967 91			967 91
Centreville (Cape Island), wharf		346 50			346 50
Centreville (Trout Cove), harbour improvements		452 51			452 51
Chapel Cove, breakwater		11,388 09			11,388 09
Charles Forest Cove, breakwater		164 57			164 57
Chebogue Beach, protection			31 83		31 83
Cheggogin, groyne		289 33			289 33
Chester	782 86				782 86
Cheticamp Point breakwater		177 48			177 48
Cheticamp wharf	8 55		1,092 27		1,100 82
Clark's Harbour, removal of rocks		374 50			374 50
Comeauville breakwater extension		2,125 92			2,125 92
Cottage Cove breakwater		959 33			959 33
Cow Bay (Port Morien)		1,989 84			1,989 84
Creignish landing pier		46 92			46 92
Cribbins Point wharf			402 66		402 66
Croft's Cove boat landing, &c.		206 74			206 74
Delaps Cove		1,161 67			1,161 67
Delorey's Beach (Monk's Head) breakwater		6,383 94			6,383 94
Devil's Island breakwater		224 70			224 70
Digby Harbour improvements	43,513 73	8,357 58			51,871 31
Dover wharf		3,925 23			3,925 23
Dublin Shore breakwater		1,040 00			1,040 00
East Bay wharf and shed		1,517 07			1,517 07
East Chezzetcook breakwater		524 50			524 50
" wharf			498 43		498 43
Eastern Passage	2,290 65		105 60		2,396 25
East Jordan wharf approach			40 22		40 22
East Port Medway wharf			325 35		325 35
East River (Pictou Co.)	27,951 10				27,951 10
Eatonville breakwater			2,123 00		2,123 00
Ecum Secum wharf		416 42			416 42
Eel Brook wharf		1,334 22			1,334 22
Falls Point (see Woods Harbour)					
Feltzen South (Spindler's Cove), breakwater		123 33			123 33
Findlay Point wharf		117 86			117 86
Five Islands wharf			248 59		248 59
Fort Lawrence (warehouse)		955 98			955 98
Fourchu wharf		117 12			117 12
Fox Island Beach protection		1,163 19			1,163 19
French River north shore breakwater		82 58			82 58
Fruids Point, removal of rocks		2,018 25			2,018 25
Gabarus, protection works		499 60			469 60
Gillis Point (East) wharf		912 50			912 50
Grand Etang, protection works	24,263 61		479 75		24,743 36
Habitant River (see Canning)					
Hall's Harbour breakwater			248 99		248 99
Hampton breakwater extension		812 35			812 35
Harbour Bouche wharf			109 80		109 80
Herring Cove wharf		875 63			587 63

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia—Continued.					
Herring Rocks (see Port Joli)					
Indian Brook, removal of rocks		199 07			199 07
Inverness (Broad Cove Mines)		3,782 77			3,782 77
Jamesville wharf		102 41			102 41
Jones Harbour, removal of rocks		624 90			624 90
Judique (Baxters) purchase of land		500 00			500 00
" (Mackays) breakwater			400 83		400 83
Kelly's Cove breakwater		105 84			105 84
Kempt Head freight shed		82 79			82 79
Kingsport breakwater		11,045 97			11,045 97
Kraut Point wharf		51 70			51 70
Lahave River	30,376 34				30,376 34
Lake Ainslie boat channel		75 99			75 99
L'Ardoise Beach protection work		619 32			619 32
Larry's River	16,013 83				16,013 83
Leitche's Creek wharf		5,880 12			5,880 12
Leonard's Cove breakwater		1,277 98			1,277 98
Liscomb wharf		2,984 68			2,984 68
Litchfield breakwater		3,415 05			3,415 05
Little Anse breakwater		262 58			262 58
Little Bras d'Or breakwater		104 78			104 78
Little Harbour improvements		809 77			809 77
Little Narrows South-wharf		75 84			75 84
Little River breakwater-wharf		17,151 13			17,151 13
Little Tancook Island breakwater		23,049 27			23,049 27
Livingston's Cove breakwater		1,124 42			1,124 42
Long Point wharf breakwater		122 10			122 10
Louisdale wharf		67 88			67 88
Louis Head breakwater		221 81			221 81
Lower East Pubnico	3,239 08				3,239 08
Lower West Pubnico wharf			210 79		210 79
Lunenburg	23,172 63				23,172 63
McAra's Brook wharf		680 57			680 57
McKay's Point ,(see Judique)					
McLeod Harbour	1,000 55				1,000 55
McNair's Cove breakwater-wharf	1,193 64	1,912 86			3,106 50
Mabou Harbour breakwater		4,166 66			4,166 66
Mabou extension of wharf		190 58			190 58
Maders Cove	1,165 85				1,165 85
Mahone Bay	48,408 27				48,408 27
Maitland, wharf			142 11		142 11
Marble Mountain wharf		107 41			107 41
Margaree Harbour breakwater		5,617 06			5,617 06
Margaree Harbour extension of hr. protection works		150 14			150 14
Margaree Island wharf			666 76		666 76
Margaree River, shear dams		2,093 85			2,093 85
Margaretville breakwater			1,981 02		1,981 02
Meat Cove wharf		142 57			142 57
Melford wharf		128 25			128 25
Merigomish (Pictou Co.) wharf			453 89		453 89
Meteghan River wharf		1,638 77			1,638 77
Meteghan, extension and restoration of wharf		4,930 25			4,930 25
Middle-West Pubnico	963 68				963 68
Middle Island	393 63				393 63
Milford-Haven, removal of old pier		136 85			136 85
Minudie wharf, (freight shed)		45 79			45 79
Monk's Head, repairs to bridge			169 95		169 95
Monk's Head (see Dalorey's Beach)					
Morden breakwater			381 85		381 85
Mulgrave wharf		3,650 93			3,650 93
Musquodoboit wharf		30 00			30 00

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia—Con.					
Neil's Harbour breakwater			207 10		207 10
New Edinburg wharf		12,292 50			12,292 50
New Harbour, improvements		145 84			145 84
Nyanza, outer end of old wharf			544 62		544 62
Ogden's Pond, improvements to entrance	170 55				170 55
Orangedale wharf		741 92			741 92
Ottawa Brook, (Victoria Co.)	2,120 34				2,120 34
Oyster Pond, entrance to harbour		500 15			500 15
Parker's Cove breakwater		1,420 63			1,420 63
Path-End, boat landing		249 92			249 92
Parrsboro' wharf			13 51		13 51
Petite Rivière breakwater			340 63		340 63
Petit de Grat	5,360 93				5,360 93
Phinney's Cove breakwater		2,736 68			2,736 68
Pictou, I.C.R. dock	1,722 47				1,722 47
Piper's Cove, breakwater pier		523 66			523 66
Point Aconi breakwater		14 78			14 78
Poirierville wharf, (shed)		146 04			146 04
Port Clyde, (Shelburne Co.)	4,764 31				4,764 31
Port Dufferin wharf			207 41		207 41
Porters Lake, boat channel to Three Fathom harbour		8,431 72			8,431 72
Port Felix wharf		4,428 04			4,428 04
Port Hastings wharf			64 80		64 80
Port Hood harbour, (closing northern entrance)		18,432 35			18,432 35
Port Hood wharf			1,357 86		1,357 86
Port Lorne, breakwater			225 96		225 96
Port Morien (see Cow Bay)					
Port Mouton, wharf			248 18		248 18
Port Richmond, breakwater		189 17			189 17
Port Wade, piers			238 46		238 46
Poulamond, wharf			1,399 94		1,399 94
Pugwash, Harbour		187 85			187 85
Quoddy Island (freight shed)		200 08			200 08
Rows Brook, wharf		82 02			82 02
Sambro, wharf		124 74			124 74
Scott's Bay, breakwater		963 26			963 26
Shag Harbour, wharf	3,415 49		325 00		3,740 49
Sheet harbour, (East River), wharf			227 93		227 93
Sheet harbour, Passage, wharf		791 27			791 27
Sheffield Vault wharf		397 49			397 49
Shelburne harbour, deep water wharf		14,533 00			14,533 00
Skinners Cove, dredging channel	331 00				331 00
Smiley's Point, breakwater		1,226 33			1,226 33
Sober Island, wharf		71 20			71 20
South Cove, (Cape Breton) wharf		1,791 97			1,791 97
South Gut, (St. Ann's) wharf			161 70		161 70
South Ingonish, wharf		5,528 29			5,528 29
South Lake (Lakevale), extension of channel protection		1,707 88			1,707 88
South Lake (Lakevale), land damages		225 00			225 00
South West Cove, (Lunenburg Co.)	250 73				250 73
Spanish Ship Bay (Liscomb) wharf, west side of Bay		324 75			324 75
Sperry's Cove (Lunenburg Co.)	900 00				900 00
Spindler's Cove (see Feltzen south)					
St. Ann's, (Victoria Co.)	13,967 16				13,967 16
St. Joseph, wharf and roadway		905 99			905 99
St. Mary's River, removal of obstructions		498 02			498 02
Stoney Island, protection works		4,073 23			4,073 23

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Nova Scotia—Concluded.					
Swain's Cove Wharf (see Cape Negro)					
Swims Point, (freight shed)		553 74			553 74
Sydney Harbour, South Bar)		4,111 22			4,111 22
Sydney Mines (wharf at Barrington's Cove)		18,578 82			18,578 82
Sydney (North)	4,952 82				4,952 82
Tangier, wharf		410 97			410 97
Tenecape, breakwater addition		5,665 96			5,665 96
The Wharfs (Lunenburg Co.) breakwater		15 00			15 00
Three Fathom Harbour breakwater			1,252 44		1,252 44
Three Fathom Harbour breakwater between two islands		7,058 66			7,058 66
Toney River, extension of channel protection piers		594 58			594 58
Trout Cove (see Centreville)					
Tusket Wedge wharf	2,100 40	1,246 03			3,346 43
Upper Prospect breakwater		504 58			504 58
Upper Washabuck wharf and shed		914 80			914 80
Urquhart's Landing			299 82		299 82
Victoria Pier		1,264 23			1,264 23
Voglers Cove wharf		300 00			300 00
Watt Settlement wharf		796 97			796 97
West Advocate breakwater		197 70			197 70
West Arichat breakwater			643 96		643 96
West Bay (Inverness Co.)	33,503 21				33,503 21
West Chezzetcook breakwater-pier		835 15			835 15
West Chezzetcook breakwater, repairs			981 09		981 09
Westport wharf		17,099 78			17,099 78
White Point breakwater and wharf approach		397 44			397 44
White Cove wharf		6,409 60			6,409 60
Whitewaters wharf			378 50		378 50
Whycocomagh wharf		565 90			565 90
Windsor	2,136 00				2,136 00
Wolfville protection works		680 96			680 96
Woods Harbour (breakwater at Fall Point)		1,255 04			1,255 04
Yarmouth Harbour	59,921 66				59,921 66
Generally	5,574 18			7,510 08	13,084 26
Totals, Nova. Scotia	380,357 80	377,883 62	22,341 47	7,510 08	788,092 97
Prince Edward Island.					
Alberton, railway wharf	2,803 42				2,803 42
Bay Fortune, breakwater			500 02		500 02
Cape Traverse, wharf			290 14		290 14
Cascumpec (Gordon's Point), wharf		66 89			66 89
Charlottetown, harbour	448 01				448 01
" Steam Navigation Co.'s wharf	5,076 79				5,076 79
Charlottetown, Peake & Conolly's whf	2,437 87				2,437 87
" Peake's wharf	1,173 40				1,173 40
" Falconwood's asylum	2,916 53				2,916 53
China Point, pier			50 05		50 05
Cove Head, breakwater		370 80			370 80
French River, Stanley bridge	1,208 12				1,208 12
Gordon's Point (see Cascumpec).					
Grand River, wharf	10,907 43	408 19			11,315 62
Haggerty's Wharf	2,318 89				2,318 89
Higgin's Shore	10,780 06				10,780 06
Lennox Island, wharf		1,202 00			1,202 00

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Prince Edward Island—Concluded.					
Miminigash Harbour, extension of northern breakwater		2,805 25			2,805 25
Mount Stewart	4,003 07				4,003 07
Naufrage Pond, protected entrance channel		82 04			82 04
Newport (see North Cardigan).					
North Cardigan (Newport), pier			246 10		246 10
Port Hill, wharf		2,527 00			2,527 00
Red Point, wharf	3,288 88		139 80		3,428 68
Robinson's Island, beach protection works			32 80		232 80
Rocky Point	550 16				550 16
Rustico breakwater, block at outer end		6,987 50			6,987 50
Souris Harbour	1,358 83				1,358 83
South Port wharf, reconstruction		3,495 47			3,495 47
Summerside Harbour	2,044 42	505 00			2,549 42
Tignish, protection pier		1,312 21			1,312 21
Tracadie. breakwater		13,853 59			13,853 50
Wood Islands, southern breakwater		83 92			83 92
Wood Islands, northern breakwater			145 84		145 84
Generally	2,787 09			1,569 10	4,356 19
Totals, Prince Edward Island	54,102 97	33,699 77	1,604 75	1,569 10	90,976 59
New Brunswick.					
Anderson Hollow, wharf			115 74		115 74
Back Bay wharf			824 32		824 32
Baie du Vin, wharf			95 64		95 64
Bathurst	16,162 66		283 73		16,446 39
Bayside, new wharf		1,557 38			1,557 38
Beaumont, new wharf		100 05			100 05
Belas Basin (see Maces Bay)					
Black River, wharf	877 58	606 52	737 09		2,221 19
Buctouche, breakwater	467 90		684 19		1,152 09
Burton Court House (River St. John)	225 00				225 00
Campbellton deep water wharf	20,854 09	2,951 90			23,805 99
Campbellton old ferry wharf (head block)	5,411 77	1,099 52	148 09		6,659 38
Campobello (see Wilson's and Welshpool)					
Cape Bald, breakwater		3,079 28			3,079 28
Cape Tormentine, breakwater	11,083 04		245 57		11,328 61
Caraquet, wharf	18,046 52				18,046 52
Castalia, breakwater			77 29		77 29
Chance Harbour, breakwater		2,413 11			2,413 11
Chatham, Canada dock	950 05				950 05
Chatham Custom House, wharf	2,384 98		607 62		2,992 60
Chatham, new wharf		67 05			67 05
Chockfish River, breakwater at mouth		413 26			413 26
Coles, wharf			99 17		99 17
Cumming's Cove (Deer Island) wharf		2,820 24			2,820 24
Dalhousie Harbour	12,879 68				12,879 68
" wharf improvements		557 64			557 64
" breakwater		7,919 88			7,919 88
Dipper harbour, breakwater	21,489 49	22,048 48			43,537 97
Dorchester wharf (bed for vessels)	91 63	564 63			656 26
Dover, Steeves Landing wharf		89 28			89 28
Escuminac. breakwater		349 45			349 45
Gardner's Creek			1,423 26		1,423 26
Goosebery Cove, breakwater		2,603 49			2,603 49
Goose Creek harbour, breakwater		4,067 50			4,067 50
Grand Anse, new groyne		2,198 39			2,198 39
Grandigue, wharf		3,200 68			3,200 68

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
New Brunswick—Continued.					
Great Salmon River, new pier on east-side of entrance, &c		13,010 48			13,010 48
Green Point, breakwater		98 73			98 73
Hampton, (Kings Co.)	1,191 57				1,191 57
Harvey Bank, raising wharf		12 00			12 00
Hatfield's Point (Kings Co.)	2,960 08				2,960 08
Hopewell Cape, wharf			45 36		45 36
Johnston's Cove (see Bayside).					
Kingston Creek (King's Co.)	1,147 31				1,147 31
Kouchibougouac, harbour works		2,450 26			2,450 26
Lameque wharf		1,451 41			1,451 41
Lawlor's Point, (see Miramichi River)					
Leonardville (Deer Island) wharf	3,651 05	2,592 49			6,243 54
L'Etang, test borings		1,049 86			1,049 86
Little Aldouane	690 10				690 10
Loggieville wharf	2,248 98		33 97		2,282 95
Lords Cove, (Deer Island), wharf	4,495 50		187 91		4,683 41
Lorneville breakwater wharf		585 97			585 97
Lower Newcastle, wharf			29 43		29 43
Maces Bay wharf (Belas Basin)		270 64			270 64
Mather's Island (Kings Co.)	538 29				538 29
Marble Cove (St. John)	2,954 19				2,954 19
Maugerville (Sunbury Co.)	518 70				518 70
Mill Cove-wharf		1,519 46			1,519 46
Millerton public wharf		2,200 00			2,200 00
Miramichi Bay	115,391 01				115,391 01
Miramichi River—					
Lawlors shore $ 12 50					
Red Bank 2,568 34					
Sinclair's wharf 3,197 55	5,778 39				5,778 39
Miscou wharf, extension		12,400 00			12,400 00
Mispec, harbour works			802 85		802 85
Moncton wharf		3,574 39			3,574 39
Neguac wharf			53 21		53 21
New Mills wharf		8,795 60			8,795 60
Oak Point wharf (Traverse)			8 55		8 55
Ox Island Bar, (Sunbury Co.)	178 52				178 52
Petite Lameque-wharf		274 61			274 61
Petit Rocher, roadway to breakwater		941 60			941 60
Pink Rock wharf (Shepody Bay)		250 00			250 00
Pleasant Bay wharf approach			19 84		19 84
Pointe du Chêne, breakwater	3,032 41		2,916 08		5,948 49
Pointe Sapin breakwater		4,940 16			4,940 16
Point Wolfe protection works		215 03			215 03
Portage River, (Kent Co.)	600 29				600 29
Raft channel (Queens Co.)	6,860 74				6,860 74
Rexton close piling		1,122 01			1,122 01
Richibucto Harbour entrance	3,413 87				3,413 87
Richibucto wharf		9,226 98			9,226 98
Richibucto Cape, breakwater wharf		8,076 82			8,076 82
Richibucto Beach-piers on north and south sides		10,045 20			10,045 20
River St. John including tributaries:—					
Baker Lake $154 96					
Baker Brook (E. Martins). 46 05					
" " (B. Michaud). 77 92					
Everett's T. Bk'water 212 91					
Edmundston's-Lajoies 101 53					
Flanders-Miles, Tobique -River 314 61					
Green River below Emmerson's Falls 97 81					

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Constructions and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS.—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
New Brunswick—Continued.					
Iroquois River, (Grand Maison)	308 03				
Iroquois River (Marquis & Michaud)	99 37				
Iroquois above Morneault	49 98				
Iroquis River	168 81				
Indian Ferry to Grand Falls	99 94				
Jenkin's, D	165 77				
Levesque, J. B	386 77				
Little River	10€ 60				
Nadeau, Alex	40 00				
Rivière de Chute dam	600 50				
River St. Francis	49 88				
Sisson Brook	150 25				
Saunders, Wm. Tobique River	259 86				
Trout River	100 60				
Victoria County to Indian Ferry	100 60				
Generally	904 59	4,596 74			4,596 74
River St. John — wharfs in tidal waters:—					
Appleby	$ 70 96				
Brundage Point	176 02				
Burton Court House	1,395 77				
Evandale	48 00				
Fredericton	27 26				
Iron Bound Cove	271 00				
Kars	152 92				
Lower Jemseg	300 00				
Newcastle	793 52				
Scotchtown	108 00				
Generally	26 82	3,370 27			3,370 27
River St. John and Tributaries-contribution of one half cost of Provincial wharfs in tidal waters:—					
Brown's Flat	$ 187 48				
Clifton	1,486 25				
Hampstead	1,565 69				
Maugerville	834 75				
Upper Maugerville	997 50				
Wilmots	887 25	5,958 92			5,958 92
River St. John, survey between Fredricton and Hawkshaw Bridge		207 50			207 50
St. Andrews wharf	34,557 21	1,846 96			36,404 17
St. John Harbour:—					
Channel	94,493 70				94,493 70
Fort Dufferin		4,165 25			4,165 25
Beacon Bar	532,103 25				532,103 25
Courtenay Bay		9,677 47			9,677 47
Partridge Island Wharf		842 81			842 81
Negro Point, breakwater		19,404 87			19,404 87
West Side	16,825 69	20,452 80			37,278 49
St. Louis River, Impts		416 67			416 67
St. Paul (Lower Caraquet), wharf		5,485 00			5,485 00
St. Stephen's	10,520 50				10,520 50

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS.—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts
New Brunswick—Concluded.					
Sackville wharf		18,199 50			18,199 50
Scotchtown (Queens Co)	3,758 21				3,758 21
Seal Cove construction of bk'water, &c		191 06			191 06
Shebody Bay, (see Pink Rock)					
Shediac wharf	7,412 60	13,936 38			21,348 98
" Island, wharf		122 46			122 46
Shippegan gully		2,988 68	74 25		3,062 93
Spoon Island (Queens Co)	1,848 00				1,848 00
Steeves Landing (see Dover)					
Stonehaven breakwater, pier		1,000 31			1,000 31
Tracadie Harbour, breakwater			675 16		675 16
Tracadie wharf			1,864 78		1,864 78
Traverse, (Restigouche Co.)	15,248 38				15,248 38
Traynor's Cove, wharf		2,134 53			2,134 53
Tynemouth Creek, Hr. improvements		555 17			555 17
Upper Salmon River, breakwater		174 60			174 60
Welshpool, (Campobello Island) wharf	4,884 75	52 81			4,937 56
White Head, wharf		75 14			75 14
Wilson's Beach, (Campobello Island)	1,367 12	306 90			1,674 02
Woodland's wharf		2,293 68			2,293 68
Generally	5,717 31			10,178 64	15,895 95
Totals, New Brunswick	995,312 11	262,267 91	12,053 10	10,178 64	1,279,811 76
Quebec.					
Amherst (see also Magdalen Islands)	9,478 80				9,478 80
Angers (L'Ange Gardien) wharf	4 50	1,029 11			1,033 61
Anse aux Canards, breakwater		295 82			295 82
Anse à Beaufils, addition to piers		628 21			628 21
Anse à Dufour, removal of boulders		100 04			100 04
Anse à la Barbe, breakwater		30 61			30 61
Anse à la Grosse Roche (Saguenay)		1,248 99			1,248 99
Anse aux Gascons wharf			1,777 27		1,777 27
Anse Blanche, removal of boulders		40 00			40 00
Anse Creuse, removal of boulders		203 00			203 00
Anse du Cap (see Cape Cove)					
Anse de Quatre Collets, removal of boulders		25 95			25 95
Aylmer (Lake Deschênes) wharf	3,844 81	6,617 36			10,462 17
Baie St. Paul (Cap aux Corbeaux) wharf	3,493 10		2,631 53		6,124 63
Barachois de Malbaie pier		1,814 29			1,814 29
Beaulac (Garthby) wharf extension		3,068 36			3,068 36
Beauport wharf			673 25		673 25
Bergeronnes wharf extension		502 08			502 08
Berthierville wharf	10,290 39	3,371 13			13,661 52
Bic Harbour (old wharf)			999 88		999 88
Bic, wharf at Pointe à Coté		29,403 46			29,403 46
Boucherville	755 68				755 68
Buckingham	54 25				54 25
Cabano Landing pier (west side)		2,486 29			2,486 29
Cacouna wharf (head block)		1,134 75			1,134 75
Cannes de Roches breakwater		1,428 60			1,428 60
Canton Fabre (see Fabre)					
Cap à l'Aigle wharf		14 07			14 07
Cap Blanc, removal of boulders		50 00			50 00
Cap Chatte, removal of boulders		65 00			65 00
Cape Cove, pier extension		436 84			436 84
Cap de la Madeleine wharf			25 75		25 75
Cap St. Ignace, approach to wharf, &c		233 79	299 96		533 75
Carleton wharf			1,680 75		1,680 75
Charlemagne	409 14				409 14
Chateauguay wharf	316 98	7,716 19			8,033 17

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Quebec—Continued.					
Chateau Richer, breakwater, pier		2,357 36			2,357 36
Chicoutimi wharf	1,427 66	8,817 83			10,245 49
Chicoutimi Basin, wharf		1,102 69			1,102 69
Como	533 96				533 96
Contrecœur wharf	1,063 83	3,091 85			4,155 68
Coteau du Lac, wharf			505 61		505 61
Coteau Landing wharf		2,993 57			2,993 57
Cross Point wharf			50 00		50 00
Desjardins wharf			376 60		376 60
Dodds Landing (see Riv. du Lièvre)					
Doucet's Landing, pile wharf	3,781 00	578 22			4,359 22
Dorval	782 28				782 28
Echafaud Basques, removal of boulders		500 27			500 27
Douglastown pier, addition		1,673 36			1,673 36
Escoumains pier		45 00			45 00
Fabre, raising wharf		673 21	78 94		752 15
Fassett wharf (Ottawa River)	155 14	7,632 05			7,787 19
Father Point wharf			1,105 98		1,105 98
Fort William wharf (Riv. Ottawa)		5,070 05			5,070 05
Fraserville (see River du Loup, en bas)					
Garthby (see Beaulac)					
Gaspé, deep water wharf		71,041 31			71,041 31
Georgeville wharf			867 89		867 89
Graham, wharf			759 38		759 38
Grandes Bergeronnes, removal of boulders		262 25			262 25
Grands Méchins wharf			617 78		617 78
Grande Rivière de Gaspé, wharf			4,410 26		4,410 26
Grande Vallée, breakwater pier		6,198 53			6,198 53
Griffin's Cove, removal of boulders		100 00			100 00
Green Shoals (Ottawa River)	56,670 59				56,670 59
Grondines wharf			20 00		20 00
Grosse-Isle quarantine station, wharf extension		2,422 89			2,422 89
Grosse Roche (see Anse à la Grosse Roche)					
Harrington Harbour wharf		387 68			387 68
Havre de la Fonderie, removal of boulders		60 00			60 00
Hudson wharf			598 78		598 78
Hull wharf	87 85		12 00	183 00	282 85
Ile aux Noix wharf			1,391 56		1,391 56
Ile Bonaventure, breakwater		1,812 10			1,812 10
Ile Gros-Bois (King Edward Park)	1,281 69				1,281 69
Ile Perrot wharf (south)	6,193 67		250 05		6,443 72
Ile Verte wharf			2,298 85		2,298 85
Ile Verte (Northeast side), protection work		1,021 83			1,021 83
Jersey Cove, removal of boulders		100 00			100 00
Knowlton Landing wharf			25 40		25 40
Lacolle wharf			485 68		485 68
Lake Aylmer (see Stratford Centre)					
Lake Massawippi, landing piers					
Ayer's Cliff	$1,873 08				
North Hatley	449 85	2,322 93			2,322 93
Laprairie wharf		4,442 78			4,442 78
L'Assomption wharf		917 02			917 02
Laurin, Ice pier		3,120 00			3,120 00
Les Eboulements, wharf and shed	3,077 04		4,138 93		7,215 97
Le Petit Débarquement wharf		17 86			17 86
Levis graving dock				13,927 89	13,927 89
Levis, deep water wharf, &c		212,150 02			212,150 02
Long Rapids (Riv. du Lièvre.)	1,453 65				1,453 65

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Quebec—Continued.					
Longueuil	1,396 61				1,396 61
Lotbinière wharf			198 41	24 06	222 74
Louiseville (see Riv. du Loup, en haut)					
Magdalden Islands—breakwaters					
Amherst $ 831 64					
Pt. à Elie 6,257 62		7,089 26			7,089 26
Magog wharf			425 80		425 80
Maria wharf		10,114 00	1,076 99		11,190 99
Marsouin wharf			199 63		199 63
Maskinongé, (see Riv. Maskinongé)					
Matane wharf	4,568 66		1,579 47		6,148 13
" protection pier		29,999 98			29,999 98
McMartin's Point (Lake Timiskaming)	760 76				760 76
Mille Vaches, removal of boulders		626 91			626 91
Mistassini wharf, (Lake St. John)		1,477 76			1,477 76
Mistassini training dykes, (Lake St. John)		1,458 18			1,458 18
Mistook wharf		283 49			283 49
Montobello (Riv. Ottawa)		7,518 60			7,518 60
Montreal Harbour, Racine Pier	4,635 00				4,635 00
Mont Louis—removal of boulders		103 00			103 00
Montmagny, wharf, rear end of basin		5,577 38			5,577 38
Montmagny	6,592 08				6,592 08
Murray Bay, wharf		553 07			553 07
Natashquan, breakwater pier		12,909 50			12,909 50
New Carlisle wharf			12 35		12 35
New Richmond, landing pier		1,331 60	34 23		1,365 83
Nicolet harbour	36,551 79				36,551 79
Nicolet extension of jetty		1,200 00			1,200 00
Norway Bay wharf, (River Ottawa)		8,382 43			8,382 43
Notre Dame de la Salette	3,257 04				3,257 04
Notre Dame du Portage wharf	13 05		486 02		499 07
Papineauville wharf		8,420 08			8,420 08
Paspébiac, East, (Portage) breakwater		9,179 44			9,179 44
Percé (Red head) removal of boulders		61 00			61 00
Percé (White Head) removal of boulders		92 00			92 00
Peribonka, wharf, (Lake St. John)		872 91			872 91
Peribonka training dykes, (Lake St. John)		583 06			583 06
Perkin's Landing, wharf			231 84		231 84
Petit Cap, breakwater		186 92			186 92
Petite Bonaventure, bk'water			299 85		299 85
Petit Esconmains, removal of boulders		182 50			182 50
Petite Riviére Saguenay, wharf		551 93			551 93
Petite Riviére Est, removal of boulders		45 00			45 00
Petite Riviére, Yamachiche, (see Yamachiche)					
Petite Tourelle, removal of boulders		75 00			75 00
Piché Point, (see Pointe Piché)					
Pierreville wharf	78 35		30 00		108 35
Pointe à Brousseau Hr. protection works		1,509 41			1,509 41
Pointe à Elie, (see Magdalen Islands)					
Pointe aux Esquimaux, wharf			228 54		228 54
Pointe à la Frégate, removal of boulders		300 02			300 02
Pointe à la Trappe, removal of boulders		45 00			45 00
Pointe aux Trembles (Portneuf)		30 40			30 40
Pointe Claire, wharf			760 47		760 47
Pointe Piché, wharf (Timiscamingue)		2,693 73			2,693 73
Port Daniel, wharf			1,680 62		1,680 62
Port Lewis, (see Riv. St. Francois)					
Quebec Harbour, Louise Basin	3,629 87				3,629 87
Quebec Harbour, Improvements to navigation	189,324 18	20,115 30			209,439 48

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Quebec.—Continued.					
Quebec, Riv. St. Charles, estuary	90,403 95				90,403 95
Red Head (see Percé)					
Repentigny, wharf			10 00		10 00
Rigaud	1,086 04				1,086 04
Rimouski, wharf	4,782 45	7,587 40		15 00	12,384 85
" Bk'water wharf		397 37			397 37
Riviére à la Pipe, wharf			985 75		985 75
Riviére aux Outardés, removal of boulders		497 10			497 10
Riv. aux Vases, (Co. Saguenay) wharf		2,071 94			2,071 94
Riv. Batiscan	7,722 46				7,722,46
Riv. Becancour, wharf near mouth	440 75	36 00			476 75
Riv. Baude, wharf		272 10			272 10
Riv. Bergeronnes, removal of boulders		351 90			351 90
Riv. Bonaventure, training pier	17,378 20	14,512 28			31,890 48
Riv. Caplan, protection piers		850 11			850 11
Riv. des Prairies	4,295 37				4,295 37
Riv. des Prairies, piers			8,881 57		8,881 57
Riv. des Vases, (Co. Temiscouata), wharf		416 20			416 20
Riv. du Lievre, (at Dodds Landing)		275 35			275 35
Riv. du Lievre, (at Val des Bois.)		380 46			380 46
Riv. du Liévre, lock.				1,514 25	1,514 25
Riv. du Loup, (Fraserville)	1,624 47		1,752 81		3,377 28
Riv. du Loup, new wharf		1,143 32			1,143 32
Rivière du Loup (Louiseville)	20,968 27				20,968 27
Rivière Girard, wharf repairs			249 03		249 03
Rivière Godefroy, Nicolet Co	1,607 64	45 00			1,652 64
Rivière Jesus	517 50				517 50
Rivière Laguerre, improvements		8,593 95			8,593 95
Rivière L'Achigan, ice breaker		212 18			212 18
Rivière L'Assomption (see Charlemagne)					
Rivière L'Assomption, at L'Assomption village, ice breaking piers		4,547 00			4,547 00
Rivière Maskinongé	6 00				6 00
Rivière Mistassini (see Mistassini)					
Rivière Nouvelle, protection works		657 04			657 04
Rivière Ouareau, ice-breaking piers			165 75		165 75
Rivière Ouelle, wharf		3,041 85			3,041 85
Rivière Peribonka, (*see* Peribonka)					
Rivière Richelieu, improvements	25,439 14				25,439 14
Rivière Richelieu (St. Denis)		40 00			40 00
Rivière Richelieu, (St. Hilaire) wharf			109 00		109 00
Rivière Saguenay	63,354 42				63,354 42
Rivière Sault au Mouton	416 84				416 84
Rivière St. Charles (*see* Quebec Harbour)					
Rivière St François	9,866 48		26 25		9,892 73
Rivière St. Louis, improvements	4,131 30				4,131 30
Rivière St. Lawrence, protection wall between Laprairie and Little St. James River		12,323 30			12,323 30
Rivière St. Maurice, Eastern channel	22,682 80				22,682 80
Rivière St. Maurice, Grandes Piles to La Tuque	9,214 43				9,214 43
Rivière Verte, wharf		614 90			614 90
Roberval, (Lake St. John) breakwater		2,994 84			2,994 84
Ruisseau à Loutre, harb. improvements		501 87			501 87
Ruisseau à Sem, pier, &c		400 00			400 00
Ruisseau à Patates, removal of boulders		70 00			70 00
Ruisseau Pelletier, removal of boulders		40 00			40 00
St. Alexis, Baie des Ha-Ha, wharf		3,779 32			3,779 32
St. Alphonse de Bagotville			1,261 46		1,261 46
St. Andrews, wharf on North River		1,558 21			1,558 21

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS.—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Quebec—Con.					
St. André de Kamouraska, wharf		4,374 95	1,020 48		5,395 43
Ste. Angèle de Laval, wharf			25 00		25 00
St. Anicet, wharf			2,496 77		2,496 77
Ste. Anne de Bellevue, shed		197 42			197 42
Ste. Anne des Monts, harbour improvements		7,066 13			7,066 13
Ste. Anne du Saguenay, wharf			75 13		75 13
St. Barthelemy	601 50				601 50
St. Blaise, wharf on River Richelieu		351 00			351 00
St. Charles de Caplan, wharf		11,998 00			11,998 00
Ste. Croix, wharf		10,751 25			10,751 25
St. Denis, wharf, (see Riv. Richelieu)					
St. Eloi (Riv. à la Loupe) pier		980 58			980 58
Ste. Emélie (Leclercville) pier		18,757 50			18,757 50
St. Félicien, Ashuapmouchouan River	4,321 24				4,321 24
Ste. Famille d'Orleans, wharf		12,621 56			12,621 56
Ste. Félicite, wharf		89 20			89 20
St. Francois d'Orleans (North) wharf			4,719 12		4,719 12
St. Francois d'Orleans (South) wharf			899 54	8 75	908 29
St. Francois du Lac, wharf	21,125 22	290 76			21,415 98
St. Gerard, ice breaker		202 30			203 30
St. Georges de Malbaie, breakwater		1,016 92			1,016 92
St. Godefroy wharf (Bonaventure)		202 56			202 56
St. Hilaire (see River Richelieu)					
St. Ignace de Loyola (East Beach.) protection wharfs, &c		2,608 00			2,608 00
St. Ignace de Loyola, South wharf		742 24			742 24
St. Irénée, wharf			211 44		211 44
St. Jean des Chaillons, wharf		755 75			755 75
St. Jean d'Orleans, wharf			281 47		281 47
St. Jean (Iberville)	367 78				367 78
St. Jean Port Joli, wharf		75 00			75 00
St. Jerôme, wharf			2,247 66		2,247 66
St. Joseph de Letellier, wharf		7,169 50			7,169 50
St. Joseph de Sorel, wharf		860 00			860 00
St. Laurent d'Orleans, wharf			865 20	114 75	379 95
Ste. Luce, wharf		45 64			45 64
St. Majorique, wharf approach		4,944 60			4,944 60
St. Marc, repairs to wharf and ice breaker			398 37		398 37
Ste. Méthode, wharf (Tikouabé)			99 75		99 75
St. Michel Yamaska (see Yamaska)					
St. Peter's channel	1,287 00				1,287 00
St. Pierre les Becquets	10 19		8 40		18 59
St. Siméon, wharf			2,117 78		2,117 78
St. Valier, wharf extension		1,327 45			1,327 45
Sabrevois			1,279 81		1,279 81
Shigawake, breakwater, wharf extension		8,467 84			8,467 84
Sorel, breakwater (Elizabeth St.)		1,369 60			1,369 60
Sorel, deep water wharf			11,107 32		11,107 32
Sorel, ice piers		795 14			795 14
Stratford Centre (Lake Aylmer)		3,060 00			3,060 00
Tadousac, wharf		14,606 50			14,606 50
Tikouabé (see St. Methode)					
Three Rivers, deep water wharf		72,778 22			72,778 22
Trois Pistoles, breakwater and pier		3,988 76			3,988 76
Val des Bois (see Rivière du Lièvre)					
Valleyfield	541 72				541 72
Vaudreuil, beach protection work	809 11				809 11
Verchères, ice breaker			430 75		430 75
Verdun	4,733 37				4,733 37
Ville Marie, wharf (Timiskaming)	3,325 99				3,325 99
White Head (see Percé)					
Woodlands, wharf	1,412 76		40 05		1,452 81

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Quebec—Concluded.					
Yamachiche, Petite Rivière	2,315 22				2,315 22
Yamaska, lock and dam				1,626 34	1,626 34
Generally	88,685 47			36,817 44	125,502 91
Totals, Quebec	771,438 48	808,238 14	63,384 64	54,231 48	1,697,292 74
Ontario.					
Barrie (Bayfield St.) wharf			892 92		892 92
Bare Point, break-water (Port-Arthur)		19,335 70			19,335 70
Bayfield, piers			3,584 42		3,584 42
Baysville, wharf		205 45			205 45
Beaumaris, wharf		3,951 34			3,951 34
Besserer's Grove, wharf, (Russell Co.)	193 28	123 26			316 54
Big Island, (Prince Edward Co.)	21,310 50				21,310 50
Brighton wharf		6,874 00			6,874 00
Britannia, (Lake Deschenes)	1,110 38				1,110 38
Brockville, Tunnel Bay Dock	965 58	11,401 08			12,366 66
Bronte wharf, &c	596 93		659 92		1,256 85
Bryant's wharf		21 67			21 67
Burk's Falls wharf			214 17		214 17
Burlington channel	3,162 69	1,327 39		2,467 07	6,957 15
Byng Inlet	14,116 08				14,116 08
Cache Bay wharf, (Lake Nipissing)	2,109 28	112 47			2,221 75
Cameron Narrows, (Georgian Bay)	27,036 32				27,036 32
Chenal Ecarté, (Sydenham River)	4,480 61				4,480 61
Clairmont Ferry (see South Nation River.)					
Cobourg harbour, East pier	3,543 63	60 75		43 50	3,647 88
Colchester wharf, extension		10,024 49			10,024 49
Colborne wharf				17 00	17 00
Coldwater, pile wharf		760 04			760 04
Collingwood harbour	1,255 15				1,255 15
Collingwood, graving dock				15,000 00	15,000 00
Collin's Inlet, (Algoma)	5,952 30				5,952 30
Dawson Point wharf (Lake Timiskaming)		13 05			13 05
Detroit river, protection of east bank in township of Malden		1,333 00			1,333 00
Dryden wharf		455 12			455 12
Echo Bay wharf	2,712 75		550 00		3,262 75
Fort William, harbour improvements	750,165 02	76,860 94			827,025 96
French River, (see Lake Nipissing)					
Goderich, harbour improvement	47,331 29	41,610 54	882 83		89,824 66
Gravenhurst (Lake Muskoka) wharf		6,528 65			6,528 65
Griffith's Island wharf			362 40		362 40
Haileybury, (Lake Timiskaming), harbour improvements	727 61	8,729 25			9,456 86
Hamilton, harbour improvements	8,896 35	23,438 00			32,334 35
Hawkesbury	619 70				619 70
Huntsville, wharf extension		2,951 58			2,951 58
Jeannette's Creek	756 12				756 12
Johnston's Bend	1,265 25				1,265 25
Kincardine harbour	7,232 16	334 19	1,499 44		9,065 79
Kingston, harbour improvements		432 65			432 65
Kingston, graving dock				113 85	113 85
Kingston R.M.C., renewing wharf		3,576 34			3,576 34
Kingsville harbour	14,920 91		9,939 87		24,860 78
Lake Nipissing, Shanty Island and Monetville		2,223 78			2,223 78
Lake Nipissing, French River, regulating works at outlets		6,282 35			6,282 35
Lakeport, reconstruction of wharf		15,504 82			15,504 82

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ontario——Continued.					
Leamington wharf			12 60		12 60
Lion's Head wharf		693 79			693 79
Little Current	57 83				57 83
L'Orignal, (Ottawa River) wharf			910 21		910 21
Magnetawan wharf		250 00			250 00
McGregor's Creek, land damages at Chatham		4,320 00			4,320 00
Meaford, harbour improvements	4,588 41	642 87	75 00		5,306 28
Michipicoten wharf (Lake Superior)		18,747 00			18,747 00
Midland harbour improvements (Tiffin)	107,380 30				107,380 30
Mitchell's Bay	1,564 00				1,564 00
Montreal River, (Latchford dam)		15,543 13			15,543 13
Montreal River (Flat Rapids)		382 34			382 34
New Liskeard, harbour improvements		3,419 85			3,419 85
Niagara-on-the-Lake	248 75				248 75
North Bay break-water		135 10			135 10
Oakville harbour	869 29		2,117 31		2,986 60
Owen Sound harbour		488 57	1,190 82		1,679 39
Pelee Island, North dock		8,218 14	485 86		8,704 00
Pelee Island, Western dock			927 67		927 67
Pembroke wharf			3,143 38		3,143 38
Penetanguishene wharf	9,010 32		500 00		9,510 32
Peterboro wharf		336 66			336 66
Petawawa wharf		2,355 18			2,355 18
Picnic Island, impts. (Georgian Bay)	60,993 82				60,993 82
Port Arthur, harbour improvements	83,942 52	85,151 54			169,094 06
Port Bruce, west pier		2,126 27			2,126 27
Port Burwell harbour	11,297 17	49,947 60			61,244 77
Port Colborne, eastern breakwater		2,904 13			2,904 12
Port Dalhousie	92 70				92 70
Port Elgin, harbour	6,249 36		3,864 58		10,113 94
Port Findlay (warehouse)		91 40			91 40
Port Hope harbour	7,850 83		2.039 23		9,890 06
Port Rowan pier			3,863 01		3,863 01
Portsmouth piers			36 00		36 00
Port Stanley harbour	7,633 23	8,595 80			16,229 03
Providence Bay, extension to wharf		206 91			206 91
Puce, repairs to sheet piling			375 00		375 00
Rainy River (mouth)	59,697 66				59,697 66
" Long Sault Rapids	3,483 69				3,483 69
Red Bay wharf		142 62			142 62
Richard's Landing, wharf			56 27		56 27
River St. Lawrence, Thousand Islands (Pavillions)			400 00		400 00
River St. Lawrence, between Kingston and Brockville	24,244 59				24,244 59
River Thames, between Chatham and mouth	35,536 37	1,772 10			37,308 47
River Thames, wharf at mouth			249 91		249 91
Rockland (River Ottawa)	815 52				815 52
Rondeau harbour, improvements		101,874 96	103 18		101,978 14
Rosseau wharf			271 49		271 49
Salt Point	3,320 00				3.320 00
Sarnia Bay, improvements	1,479 50				1,479 50
Saugeen River	2,800 00		989 71		3,789 71
Sault St. Marie wharf		13,134 80			13,134 80
Sault St. Marie, old Plummer wharf		226 37			226 37
Severn River at Washago				40 25	40 25
Silver Centre wharf, (Lake Timiscaming)			109 68		109 68
Smyth wharf, Elk Lake			575 14		575 14
Southampton, harbour improvements	62 91	986 69			1,049 60
South Nation River, at Clairmont ferry	1,268 28				1,268 28
South River, (Lake Nipissing)	1 935 38				1,935 38

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ontario—Concluded.					
Spanish River, at mouth	1,992 14				1,992 14
Spanish River wharf		17 88			17 88
St, Joseph, wharf approach (Lake Huron)		775 37			775 37
Sturgeon Falls, completion of dock	952 48	706 54			1,659 02
Sturgeon river (mouth)	1,258 86				1,258 86
Summerstown, wharf	44 50		1,220 00		1,264 50
Sydenham River, (see Chenal Ecarté)					
Sydenham River (see Wallaceburg)					
Telegraph and Nigger Island (Near Trenton)	15,454 39				15,454 39
Thessalon harbour, breakwater		4,147 92			4,147 92
Thornbury harbour, improvements		15,722 48	3,619 09		19,341 57
Tiffin, (see Midland harbour)					
Tobermory, glance booms			96 30		96 30
Toronto harbour improvements:—					
Ashbridge bay	21,886 38				21,886 38
Eastern entrance	4,039 80				4,039 80
Western Gaps		113,737 67			113,737 67
Treadwell wharf		142 80			142 80
Two Creeks harbour, (see Wheatley)					
Two and Seven Miles Narrows Glance booms (Georgian Bay)		1,056 76			1,056 76
Victoria Harbour (Port McNicol) improvements.	149,983 76				149,983 76
Victoria Island, (shipyard, Ottawa Riv.)	3,891 02				3,891 02
Wallaceburg, (Running Creek)	3,108 25				3,108 25
Wallaceburg, (Sydenham River)	947 06				947 06
Waubaushene, (Fesserton-Coldwater)	20,636 52				20,636 52
Wendover wharf			268 22	13 50	281 72
Wheatley (Two Creeks) breakwater		320 63			320 63
Whitby, harbour improvements, purchase of harbour		20,065 20		50 00	20,115 20
Wiarton, breakwater pier	7.607 48	11,026 25			18,633 73
Windsor, landing dock		333 68			333 68
Wingfield basin	100 00				100 00
Generally	79,460 24			20,407 15	99,867 39
Totals, Ontario	1,668,245 20	735,218 89	46,085 63	38,152 32	2,487,702 04
Manitoba.					
Fairford river		6,709 12			6,709 12
Fork River	342 37				342 37
Gimli Harbour	935 27	4,604 36			5,539 63
Lake Winnipeg wharf (*see* Selkirk)					
Lister's Rapids (Winnipeg river)	6,075 76				6,075 76
Lockport	1,291 39				1,291 39
Mossy river (Lake Dauphin)	2,399 90				2,399 90
Oak Point (Lake Manitoba)	587 50				587 50
Red River (at mouth)	22,573 62				22,573 62
Red River, St. Andrews Lock, &c		67,622 54		10,121 17	77,743 71
Red River, St. Andrews, construction of approaches		6,336 34			6,336 34
Selkirk wharf	5,130 05	1,856 59			6,986 64
Victoria Beach Bay, breakwater and wharf		175 94			175 94
Winnipeg Beach, pier		10,415 80			10,415 80
Generally	2,113 49			6,351 07	8,464 56
Totals, Manitoba	41,449 35	97,720 69		16,472 24	155,642 28

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Totals.
HARBOURS AND RIVERS—*Con.*	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Saskatchewan and Alberta.					
Athabaska River, removing boulders, &c.		6,272 44			6,272 44
Edmonton wharf		41 24			41 24
Last Mountain lake	5,629 76	23,961 46			29,591 22
Lesser Slave river, improvements	3,792 08				3,792 08
North Saskatchewan river, opposite Prince Albert		3,509 83			3,509 83
North and South Saskatchewan rivers, surveys of rapids		32,104 71			32,104 71
Prince Albert wharf		11,380 68			11,380 68
Generally				10,222 59	10,222 59
Totals, Saskatchewan and Alberta	9,421 84	77,270 36		10,222 59	96,914 79
British Columbia.					
Alberni	48,818 51				48,818 51
Arrow Lakes, improvements at narrows		20,990 21			20,990 21
Bamfield wharf (approach)		742 51			742 51
Boswell wharf		107 22			107 22
Columbia River, improvements	12,848 28				12,848 28
Columbia & Kootenay Rivers, wharfs—					
Harrop wharf $4,484.03					
Kokanee wharf 7,791.56					
Proctor wharf 1,122.20					
Generally 5,461.61		18,859 40			18,859 40
Esquimalt, graving dock				15,138 80	15,138 80
Fraser and Thompson Rivers, wharfs—					
Chase wharf $8,310.68					
Sorrento wharf 6,052.90					
Generally 6,320.12		20,683 70			20,683 70
Fraser River, near mouth	71,060 06				71,060 06
Fraser River, dams at Nicomen Slough		12,720 61			12,720 61
Fraser River (lower) wing dams, &c.		27,025 14			27,025 14
Fraser River, training pier		365 35			365 35
Hardy Bay wharf			1,452 95		1,452 95
Kincolith wharf		65 50			65 50
Kootenay Lake	12,714 53				12,714 53
Hollyburn wharf		4,999 16			4,999 16
Harrison River, wing dam		11,115 00			11,115 00
Naas River	3,194 33				3,194 33
Needles, wharf		202 09			202 09
Nelson	758 16				758 16
New Westminster	8,720 45				8,720 45
Okanagan river	14,283 17				14,283 17
Powell river breakwater		50,091 60			50,091 60
Prince Rupert, quarantine wharf		217 58			217 58
Purchase of New South Wales turpentine timber for sundry wharfs		21,189 53			21,189 53
Sidney Island wharf			1,145 75		1,145 75
Skeena River	10,191 52				10,191 52
Stewart (head Portland Canal) wharf		12,359 13			12,359 13
Surf Inlet wharf		4,236 21			4,236 21
Thompson River, improvements	10,148 13	1,894 39			12,042 52
Tofino wharf			998 00		998 00
Union Bay wharf		339 46			339 46
Upper Fraser river, improvements	7,888 52				7,888 52
Upper Lilloet river		10 07			10 07
Vancouver harbour	45,126 56				45,126 56
Victoria harbour	84,194 28				84,194 28
Generally	8,137 51			11,178 61	19,316 12
Totals, British Columbia	338,084 01	208,213 86	3,596 70	26,317 41	576,211 98

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
HARBOURS AND RIVERS.—*Con.*	$ cts.	$ cts.	$ cts,	$ cts.	$ cts.
British Columbia.—Con.					
Yukon Territory.					
Lewis and Yukon rivers, improvements.	.....	3,999 73	....	... .	3,999 73
Harbours and Rivers Generally.					
General expenses of staff, &c.....	2,631 94	.....	....	11,913 36	14,545 30
Lake Timiskaming plant, repairs, &c...	....	.....	6,926 45	....	6,926 45
Salaries of district engineers, assistants, &c.....	.....	.....	.....	231,914 35	231,914 35
Totals, harbours and rivers generally	2,631 94	.....	6,926 45	243,827 71	253,386 10
Dredges and Dredging Plant.					
Maritime Provinces.....		65,281 26	84,268 03	....	149,549 29
Ontario and Quebec.....		79,248 67	115,229 54	.....	194,478 21
" Victoria Island shipyard...		60,025 46	....	.....	60,025 46
Manitoba.....		36,504 72	4,323 67	... .	40,828 39
Saskatchewan and Alberta.....		.....	2,433 90	.....	2,433 90
British Columbia.....		260,543 62	60,244 86	....	320,788 48
Totals, dredges and dredging plant.....		501,603 73	266,500 00	....	768,103 73

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Name of Work.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
SLIDES AND BOOMS.	$ cts.	$ cts.	$ cts.	$ cts
Richelieu River (Beloeil)		23 86	146 95	170 81
" at St. Johns		23 00		23 00
River Saguenay	4,034 67		4,680 19	8,714 86
" St. Maurice	61,892 99		45,789 67	107,682 66
Ottawa District.				
Black river		483 45		483 45
Coulonge river		2,862 89		2,862 89
Gatineau river	3,670 00	1,098 21		4,768 21
Madawaska river		5,008 34		5,008 34
Ottawa river		2,018 66	30,686 12	32,704 78
Petawawa river		4,463 80		4,463 80
Newcastle district			250 00	250 00
North Saskatchewan river, Goose Encampment	4,792 97			4,792 97
Collection of slide and boom dues			2,908 01	2,908 01
Totals, slides and booms	74,390 63	15,982 21	84,460 94	174,833 78
ROADS AND BRIDGES.				
(Maritime Provinces.)				
Courtenay Bay—Marsh Road	8,000 00			8,000 00
International Bridge, St. Leonard—Van-Buren	12,003 18			12,003 18
Interprovincial bridge Metapedia	1,158 20			1,158 20
(Quebec and Ontario.)				
Interprovincial bridge at Hawkesbury	418 67			418 67
Bryson bridge	1,217 15			1,217 15
Chapeau bridge (new)	638 73			638 73
" (old)		576 95		576 95
North Timiskaming bridge over Quinze river	580 26			580 26
Ottawa City, bridges and streets maintained by Government.				
Chaudiére bridges and approaches		1,784 56		1,784 56
Sappers, Dufferin bridges and Wellington street		151 00	7,572 10	7,723 10
Extension of Sappers and Dufferin bridges	160,802 12			160,802 12
Lighting all Ottawa bridges and streets maintained by Government			1,704 09	1,704 09
York bridge (Grand river)		124 85		124 85
(Saskatchewan, Alberta and British Columbia.)				
Edmonton bridge		341 95		341 95
Bow and Spray river bridges at Banff		553 83		553 83
Totals, roads and bridges	184,818 31	3,533 14	9,276 19	197,627 64

PART II—STATEMENT A—EXPENDITURE.—*Continued.*

Name of Work.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
TELEGRAPH LINES.	$ cts.	$ cts.	$ cts.	$ cts.
Newfoundland.				
Cape Ray (subsidy)			250 00	250 00
Maritime Provinces.				
Cape Breton lines	6,809 99		25,719 45	32,529 44
Prince Edward Island and Mainland (subsidy)			6,946 66	6,946 66
Bay of Fundy			2,918 47	2,918 47
Escuminac	346 24		675 60	1,021 84
Quebec (Mainland).				
Mingan—Right of way	8,000 00			8,000 00
North Shore—St. Lawrence, east of Bersimis			25,303 23	25,303 23
" " west "	1,015 97		15,322 34	16,338 31
Timiskaming (Kipawa Dam)			632 77	632 77
Father Point (subsidy)			500 00	500 00
Quebec (Islands.)				
Anticosti			6,281 38	6,281 38
Grosse Isle, quarantine system	2,641 39		5,552 21	8,193 60
Isle aux Coudres (subsidy $200.00)			700 50	700 50
Magdalen Islands			5,930 67	5,930 67
Cable ship *Tyrian*			55,914 76	55,914 76
Generally, Gulf and Maritime Provinces			5,259 23	5,259 23
Ontario.				
Pelee Island			364 22	364 22
Saskatchewan and Alberta.				
Qu'Appelle-Edmonton-Athabaska System	56,515 67		53,788 49	110,304 16
British Columbia and Yukon.				
Ashcroft-Dawson System	26,062 80		219,973 88	246,036 68
Golden-Windermere	977 21		3,811 18	4,788 39
Kamloops-Okanagan	13,481 32		22,941 44	36,422 76
Vancouver Island lines	20,176 46		41,989 88	62,166 34
Telegraph lines generally			4,955 37	4,955 37
Totals, telegraphs	136,027 50		595,731 73	641,758 78

PART II—STATEMENT A—EXPENDITURE—*Continued.*

Miscellaneous.		Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
		$ cts.	$ cts.	$ cts	$ cts.
SURVEYS AND INSPECTIONS.					
Survey of Richelieu and Yamaska Rivers		1,735 75			1,735 75
Surveys—Maritime Provinces				29,931 81	
" Quebec				35,929 50	
" Ontario				24,291 28	
" Manitoba				3,620 28	
" Saskatchewan and Alberta				4,138 72	
" British Columbia				3,338 27	
" Generally				1,766 81	103,016 67
Upper Ottawa River Storage Dams—					
Gordon Creek Dam	$ 21,891 35				
Kipawa Dam	11,761 01				
Kipawa Telephone Line	5,243 14				
Quinze Telephone Line	6,602 71				
Quinze Dam	70,458 70				
Timiskaming Dam	179,659 35				
Timiskaming Telephone Line	103 76				
Generally	29,588 78	325,308 80			325,308 80
Upper Ottawa River investigation		24,787 36			24,787 36
River Gaugings				2,443 74	2,443 74
Cement Testing Laboratory		775 82			775 82
Decoration of Public Buildings, &c., Coronation of H.M King George V.				24,656 70	24,656 70
Halifax Memorial Tower (Inscription Stone)		900			900
International Waterways Commission				43,270 08	43,270 08
International Joint Commission				15,182 80	15,182 80
International Commission—River St. John, N.B.				19,413 19	19,413 19
River St. Lawrence Commission				1,430 89	1,430 89
Monument to the memory of the late George Brown.		2,254 35			2,254 35
Monument to the memory of the late Thos. D'Arcy McGee		2,254 35			2,254 35
Monument to the memory of the late Sir L. H. Lafontaine and the late Hon. Robert Baldwin		4,500 00			4,500 00
Gratuities to widows or other representatives of 22 deceased employees under Civil Service Amendment Act, Sec. 41				2,804 52	2,804 52
Compensation to Capt. J. L. Card of Snagboat "Samson"				250	250
Totals, miscellaneous		362,516 43		212,468 59	574,985 02

PART II—STATEMENT A—EXPENDITURE—*Concluded.*

Name of Works.	Dredging.	Construction and Improvements.	Repairs and Furniture.	Staff and Maintenance.	Total.
RECAPITULATION.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Totals, Public Buildings—					
Nova Scotia		68,797 84	14,014 58	46,550 96	129,363 38
Prince Edward Island		12,705 37	1,918 11	8,852 15	23,475 63
New Brunswick		262,534 29	11,297 16	46,936 61	320,768 06
Quebec		408,484 57	34,901 59	162,345 74	605,731 90
Ottawa Buildings		779,111 06	292,719 43	516,793 47	1,588,623 96
Ontario (excluding Ottawa)		340,106 95	28,417 73	165,343 03	533,867 71
Manitoba		76,065 70	15,026 55	69,369 85	160,462 10
Saskatchewan and Alberta		238,006 58	14,731 63	83,618 74	336,356 95
British Columbia		256,823 36	22,459 64	60,612 54	339,895 54
Yukon Territory		4,375 00		56,764 13	61,139 13
Public Building generally				41,642 58	41,642 58
Totals, Harbours, Rivers, &c.					
Nova Scotia	380,357 80	377,883 62	22,341 47	7,510 08	788,092 97
Prince Edward Island	54,102 97	33,699 77	1,604 75	1,569 10	90,976 59
New Brunswick	995,312 11	262,267 91	12,053 10	10,178 64	1,279,811 76
Quebec	771,438 48	808,238 14	63,384 64	54,231 48	1,697,292 74
Ontario	1,668,245 20	735,218 89	46,085 63	38,152 32	2,487,702 04
Manitoba	41,449 35	97,720 69		16,472 24	155,642 28
Saskatchewan and Alberta	9,421 84	77,270 36		10,222 59	96,914 79
British Columbia	338,084 01	208,213 86	3,596 70	26,317 41	576,211 98
Yukon Territory		3,999 73			3,999 73
Harbours and Rivers generally	2,631 94		6,926 45	243,827 71	253,386 10
Total, dredges and dredging plant		501,603 73	266,500 00		768,103 73
" slides and booms		74,390 63	15,982 21	84,460 94	174,833 78
" roads and bridges		184,818 31	3,533 14	9,276 19	197,627 64
" telegraph lines		136,027 05		505,731 73	641,758 78
" miscellaneous		362,516 43		212,468 59	574,985 02
Grand totals of expenditure	4,261,043 70	6,299,151 10	877,494 51	2,490,977 56	13,928,666 87

PART II—STATEMENT B—SHOWING the Cost of the following Service for each Public Building. &c., (the total for each Province being carried into statement 'A').

Name of Building.	Rents.	Salaries of and Supplies for Engineers	Heating.	Lighting.	Water.	Total.
Nova Scotia.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Amherst post office, &c.		571 60	201 23	728 74	32 00	1,533 57
Annapolis post office, &c.		426 56	230 23	111 25	40 00	808 04
Antigonish post office, &c.		454 61	194 32	264 50	15 00	928 43
Arichat post office, &c		159 05	222 50	3 60		385 15
Baddeck post office, &c.		415 94	180 00	30 50		626 44
Bridgewater post office		458 66	157 61	283 68	34 08	934 03
Canso post office		485 03	359 25	196 45	5 00	1,045 73
Dartmouth post office		436 84	109 91	125 04	29 00	700 79
Digby post office, &c.		442 21	272 25	338 23	64 00	1,116 69
Glace Bay post office		600 00	196 00	626 05	55 00	1,477 05
Guysboro post office, &c		259 72	261 25	307 25	14 38	842 60
Halifax Asst. Receiver General's Office	300 00		39 60			339 60
" Appraiser's Office (Exam. W.H.)	750 00	921 18	49 00	52 35		1,772 53
" custom house	53 00	4,751 94	138 20	2,290 39		7,233 53
" immigrant shed		749 12	273 98	1,322 84		2,345 94
" immigration detention building (Trachoma)			209 57	157 62		367 19
" post office	11 75	3,424 44	22 20	247 76		3,706 15
Inverness post office, &c		422 47	385 65	350 54	56 25	1,214 91
Kentville post office, &c.		410 96	239 65	226 00	50 00	926 01
Liverpool post office, &c		413 01	180 75	186 28	18 00	792 04
Lunenburg post office, &c.		498 81	267 25	295 10	59 00	1,120 16
New Glasgow post office, &c		474 96	314 61	581 76	100 00	1,471 33
North Sydney post office, &c		519 55	434 92	577 42	32 00	1,563 89
" engineer's office	450 00			6 69		456 69
" immigration building			11 50	16 61		28 11
Pictou post office and custom house		677 77	448 35	389 31	125 00	1,640 43
Shelburne post office, &c	21 75	416 18	235 75	291 00		964 68
Springhill post office, &c		573 19	257 46	422 64	30 00	1,283 29
Sydney post office, &c		571 68	379 66	1,047 55	58 00	2,056 89
" Railway mail room		40 00				40 00
" Mines post office, &c		475 30	223 52	587 16	30 00	1,315 98
Truro post office, &c		430 85	267 75	617 54	30 00	1,346 14
Westville post office		424 83	171 00	312 88	21 00	929 71
Windsor post office, &c		534 60	251 65	162 25	50 00	998 50
Yarmouth post office, &c.		521 35	377 50	909 39	72 00	1,880 24
Totals for Nova Scotia (carried to Statement A, p. 7)	1,586 50	21,962 41	7,563 47	14,060 37	1,019 71	46,192 46
Prince Edward Island.						
Charlottetown Dominion building	44 00	2,981 42	823 23	1,626 86	225 00	5,700 51
" engineer's office			83 00			83 00
" experimental farm			115 44	58 74		174 18
Georgetown post office, &c		136 03	199 29	28 70		364 02
Montague "		169 53	182 88	74 23		426 64
Souris "		389 40	348 56	103 14		841 10
Summerside "		438 66	445 44	349 60	29 00	1,262 70
Totals for Prince Edward Island (carried to Statement A, p. 8).	44 00	4,115 04	2,197 84	2,241 27	254 00	8,852 15
New Brunswick.						
Bathurst post office, &c		469 51	277 65	622 48		1,369 64
Campbellton post office, &c	100 00	444 61	190 75	80 69	5 50	721 55
Chatham armoury		0 50		3 96		4 46
" P,O. and engineer's office	46 25	315 30	350 97	559 12	25 00	1,296 64
Clair immigration building	120 00					120 00
Dalhousie post office, &c		407 57	252 22	28 80	26 00	714 59
Fredericton "		560 77	443 01	925 77	120 50	2,050 05
Grand Falls "	120 00					120 00

PART II—STATEMENT B.—EXPENDITURE—*Continued.*

Name of Building.	Rents.	Salaries of and Supplies for Engineers.	Heating.	Lighting.	Water.	Total.
New Brunswick—Concluded.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ ts.
Marysville post office, &c		139 12	187 44	17 00	11 00	354 56
Moncton "		476 97	327 16	664 87	134 00	1,603 00
Newcastle "		417 21	359 19	345 00	35 00	1,156 40
Richibucto "		438 98	341 69	373 78		1,154 45
St. John custom house	126 50	2,999 85	2,000 10	619 20	1,619 43	7,465 08
" detention hospital	1,187 86	747 68	120 49	21 69	93 50	2,171 22
" engineer's office	964 25				24 00	988 25
" immigrant building	3,157 98	1,266 42	1,710 32	599 64	199 84	6,934 20
" post office		2,826 64	878 63	3,368 48	1,270 89	8,344 64
" quarantine, Partridge island		720 00			607 56	1,327 56
" savings bank		1 50	444 53	73 99	27 54	547 56
" West (Carleton) post office	3 04	448 71	118 45	179 56	10 50	760 26
St. Leonard immigration building	79 00					79 00
St. Stephen "	133 33				8 14	141 47
" post office		533 19	185 00	373 44	80 00	1,171 63
Sussex "		415 06	342 10	97 67	50 00	904 83
Tracadie Lazaretto		720 00	1,970 92			2,690 92
Woodstock post office, &c		556 10	310 75	368 96	34 00	1,269 81
Totals for New Brunswick (carried to Statement A p. 8.)	6,038 21	14,905 69	10,811 37	9,324 10	4,382 40	45,461 77
Quebec.						
Acton Vale post office		515 40	191 95	106 75	24 00	838 10
Aylmer "		113 81	240 78	188 31	33 00	575 90
Berthierville "		65 84	160 00	116 66	33 25	375 75
Black Lake "	54 78					54 78
Buckingham "		128 00	268 19	96 55	27 90	520 64
Chicoutimi " &c		581 44	393 60	518 10	375 00	1,868 14
" telegraph office	95 00					95 00
" engineer's office	50 00					50 00
Coaticook post office, &c		455 95	346 83	264 52	50 00	1,117 30
Cookshire "		408 06	278 50	181 31	25 00	892 87
Drummondville post office and custom house		430 38	218 31	127 70	20 90	797 29
Dundee custom house			93 50	63 00		156 50
Farnham (west) P.O.		300 00	113 20	102 14	20 00	535 34
Father Point, engineer's office	35 00					35 00
Fraserville post office, &c		470 08	526 70	165 08	233 35	1,395 21
Granby "		308 10	302 65	187 14	150 00	947 89
Hochelaga "		208 95	262 82	178 30	70 87	720 94
Iberville " &c		482 30	72 00	45 22	12 00	611 52
Hull "		154 25	286 00	418 84	274 73	1,133 82
Isle Verte, engineer's office	91 00					91 00
Joliette post office		419 81	208 99	187 72	108 00	924 52
Knowlton " and armoury		154 35	207 47	157 44	21 00	540 26
Lachine "		115 81	116 38	165 81	78 60	476 60
Lachute "		412 15	231 68	447 96	63 75	1,155 54
Laprairie "		169 94	161 48	30 85	45 00	407 27
L'Assomption post office		360 07	164 00	166 35		690 42
Lévis " &c		590 95	495 18	445 59	500 00	2,031 72
Longueuil "		337 30	150 15	92 00	41 14	620 59
Megantic "		50 57				50 57
Magog "		440 57	335 17	219 12	78 56	1,073 42
Montmagny "	185 60	409 95	183 50	176 67	50 00	1,005 72
" engineer's office	71 04					71 04
Montreal annuities office					7 18	7 18
" Canadian ordnance corps office	2,000 00					2,000 00
" canal custom house		3 75		25 40	3 88	33 03
customs, express and parcel office, D'Youville St		925 28	946 43	595 86	546 47	3,013 74

PART II—STATEMENT B.—EXPENDITURE—*Continued.*

Name of Building.	Rents.	Salaries of and Supplies for Engineers.	Heating.	Lighting.	Water.	Total.
Quebec—Concluded.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Montreal custom house	43 75	4,494 78	1,233 19	649 68	48 56	6,469 36
" examining warehouse	76 25	12,940 04	1,444 52	2,394 75	1,124 91	17,980 47
" immigration building	2,749 49		439 23	169 52	137 65	3,495 89
" inland revenue office		673 96	388 66	136 20	99 97	1,298 79
" post office (Main)	292 92	26,155 81	1,712 20	12,928 79	1,757 70	42,847 42
" P. O. station A (Wellington St.)	213 00					213 00
" " B (St. Catherine St.)		1,278 08	420 50	702 75	330 83	2,732 16
" " C (Amherst St.)	1,000 00	729 76	306 75	535 06	96 09	2,667 66
" " D		569 92	348 38	125 01	95 12	1,138 43
" " E		125 59	301 89	394 66	24 16	846 30
" St. Cunegonde P. O	1,750 00					1,750 00
" St. Henri P. O		66 03	323 64	53 06	37 92	480 65
" Westmount letter carrier depot	1,200 00			13 51	5 40	1,218 91
" Public Works offices	1,848 93				52 38	1,901 31
Nicolet post office		534 08	193 40	174 31	61 00	962 79
Nomining immigrant building		300 00	148 50	9 88		458 38
Peribonka immigrant building		303 88	86 90	5 75		396 53
Pierreville post office		157 27	90 00	31 43	15 00	293 70
Plessisville post office		123 76	220 40	137 05	73 64	554 85
Quebec Citadel buildings	25 50	549 00	674 93	84 51		1,333 94
" colonization agency	350 00					350 00
" culler's office		541 50	76 50	1 25		619 25
" custom house		616 83	80 00			696 83
" detention hospital	600 00		751 50	486 66	200 00	2,038 16
" engineer's office	193 68					193 68
" examining warehouse		1,570 85	1,369 97	530 70		3,471 52
" immigration building			593 44	2,265 27	149 62	3,008 33
" inland revenue (Gas Inspectors, W. & M.)	1,080 00		242 13	112 94		1,435 07
" observatory				126 50		126 50
" post office	135 04	6,269 81	923 14	1,973 29	687 50	9,988 78
" Queen's wharf building			556 57		687 50	1,244 07
" St. Sauveur post office	640 00	150 00			40 00	830 00
" St. Roch "		487 05	448 42	347 36		1,282 83
Richmond post office, &c		499 82	287 04	374 30	25 00	1,186 16
Rimouski post office, &c	40 00	317 58	246 43	183 27	75 00	862 28
Roberval immigration shed		300 00		226 81		526 81
Sherbrooke post office, &c	39 94	655 64	622 80	526 61	50 00	1,894 99
" engineer's office	346 50					346 50
Sorel post office, &c		587 51	376 56	527 61	250 00	1,744 68
St. Eustache post office, &c	144 00			67 92		211 92
Ste. Anne de Bellevue, post office	125 00					125 00
St. Gabriel de Brandon, post office	150 00		45 00	29 15		224 15
St. Felix de Valois, post office	31 00					31 00
St. Hyacinthe, post office, &c		639 42	258 52	510 12	75 00	1,483 06
" inland rev. office		410 09	182 40	36 96	50 00	679 45
St. Jerome, post office, &c		441 47	327 04	150 81	56 00	975 32
St. Johns post office, &c		326 04	218 50	258 65	50 00	853 19
" custom house		349 92	109 21	27 45	60 00	546 58
St. Louis du Mile End post office		437 26			17 96	455 22
St. Regis Indian office & C. H			42 89			42 89
Terrebonne post office, &c		314 71	175 50	179 98	15 00	685 19
Thetford Mines post office, &c		182 64	229 22	240 00	100 00	751 86
Three Rivers custom house		1 25				1 25
" engineer's office	209 83					209 83
" post office &c	16 25	1,027 15	143 75	531 30	51 07	1,769 52
Trois Pistoles post office	125 00					125 00
Valleyfield post office, &c		432 23	417 43	158 17	90 00	1,097 83
Victoriaville post office, &c	1 00	166 05	477 96	223 14	62 50	630 65
Totals for Quebec (carried to Statement A. p. 10)	16,009 50	74,739 84	24,190 47	34,111 93	9,645 76	158,697 50

PART II—STATEMENT B.—EXPENDITURE—*Continued.*

Name of Building.	Rent.	Salaries of and Supplies for Engineers	Heating.	Lighting.	Water.	Total.
Ontario (excluding Ottawa.)	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Alexandria post office, &c		529 97	235 03	233 70	6 00	1,004 70
Almonte post office, &c		420 87	235 32	79 53	301 38	1,037 10
Amherstburg post office, &c		409 66	201 80	127 35	45 00	783 81
Arnprior post office, &c		480 40	247 99	518 79	32 00	1,279 18
Barrie post office, &c		461 81	361 41	239 16	50 00	1,112 38
Belleville post office, &c		729 57	590 84	1,167 69	83 25	2,571 35
Berlin post office, &c		496 08	297 04	483 77	33 82	1,310 71
Blenheim post office, &c	250 00					250 00
Bowmanville post office, &c		443 40	151 90	125 20	10 00	730 50
Brampton post office, &c		443 76	17 00	338 34	25 00	824 10
Brantford post office, &c		662 69	1,575 26	338 60	38 00	2,614 55
Bridgeburg post office, &c		348 02	160 25	81 00	20 00	609 27
Brockville post office, &c		698 19	425 15	627 72	170 00	1,921 06
Carleton Place post office, &c		411 81	165 00	131 53		708 34
Cayuga post office, &c		64 75	64 69	77 51	3 80	210 75
Chatham post office, &c		661 80	283 04	126 84	13 85	1,085 53
Clinton post office, &c		229 65	148 89	188 80	13 57	580 91
Cobourg post office, &c		526 46	235 44	652 99	56 88	1,471 77
Cornwall post office, &c		549 74	361 50	264 10	75 00	1,250 34
Deseronto post office, &c		563 91	280 00	347 80	39 00	1,230 71
Dundas post office	600 00	49 92	45 50	62 00	7 50	764 92
Fergus post office			139 00			139 00
Fort William post office		587 81	631 25	566 38	90 00	1,875 44
" engineer's office	600 00					600 00
Galt post office & custom house		549 67	290 85	279 74	50 37	1,170 63
Gananoque post office & custom house		10 35	298 37	382 50	41 49	732 71
Glencoe post office		431 12	175 80	351 64	3 00	960 96
Goderich post office, &c		503 90	284 01	212 08	60 00	1,059 99
Guelph post office, &c		570 97	456 02	737 54	108 50	1,873 03
Hamilton custom house		709 75		151 88	33 05	894 68
" inland rev. office				69 63	26 10	95 73
" branch post office (Winer building)	60 00			3 65		63 65
" P.O. & Exam'g warehouse		2,947 23	1,391 50	1,660 66	1,250 00	7,249 39
" Sta. "B" post office	840 00			80 45	10 50	930 95
Hawkesbury post office, &c		475 94	215 78	147 84	18 00	857 56
Ingersoll post office, &c		545 73	329 53	606 16	34 35	1,515 77
Kenora post office, &c		428 91	487 88	559 88	70 76	1,547 43
Kincardine post office, &c		249 40	248 29	583 30	30 00	1,110 99
Kingston custom house		277 86	252 50	131 70	59 25	721 31
" inland rev. office	2,164 71	641 82	393 20	64 20	109 40	3,373 33
" ordnance corps office	1,000 00					1,000 00
" post office		742 98	388 65	1,082 92	59 50	2,274 05
Leamington post office		428 56	245 00	239 84	21 50	934 90
Lindsay post office, &c		477 29	230 16	108 66	30 00	846 11
London custom house		1,196 54	1,032 06	575 72	91 88	2,896 20
" engineer's office	411 84					411 84
" post office		1,605 04	879 26	1,986 87	100 63	4,571 80
L'Orignal post office	125 00					125 00
Markham post office		604 60	121 42	79 08	5 50	810 60
North Bay post office, &c		900 70	654 19	596 93	56 00	2,207 82
Napanee post office, &c		570 55	357 38	123 07	79 35	1,130 35
Niagara Falls post office, &c		601 17	289 24	214 00	24 38	1,128 79
Orangeville post office, &c		399 96	204 70	170 56	20 00	795 22
Orillia post office, &c		414 90	256 76	102 23	32 50	806 39
Oshawa post office		522 77	220 01	227 49	28 38	998 65
Owen Sound post office		511 16	356 95	222 46	50 00	1,140 57
Parkhill "		216 77	178 53	72 02		467 32
Paris " &c		414 36	143 76	126 29	61 60	746 01
Pembroke "		474 26	307 32	241 65	36 00	1,059 23
Peterboro' custom house		325 90	220 00	168 01	50 00	763 91
" post office		479 90	342 63	223 93	75 00	1,121 46
Petrolea " &c		465 62	156 07	206 18	47 76	875 63

PART II—STATEMENT B.—EXPENDITURE—*Continued.*

Name of Building.	Rents.	Salaries of and Supplies for Engineers	Heating.	Lighting.	Water.	Total.
Ontario—Continued.	$ cts	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Picton post office		435 87	252 52	163 64	27 00	879 03
Port Arthur post office		547 08	425 65	329 80	206 55	1,509 08
" immigrant building			89 00	18 50	14 25	121 75
" engineer's office	611 00			2 65		613 65
Port Colborne post office		474 81	118 20	128 25	25 00	746 26
Port Burwell engineer's office	60 00					60 00
Port Hope post office, &c		445 65	296 00	457 75	20 87	1,220 27
Prescott " custom house		528 43	311 50	196 30	120 00	1,156 23
Renfrew "		417 16	311 97	292 40	27 25	1,048 78
Ridgetown "	325 00					325 00
Sandwich " &c		368 77	278 10	84 32	6 30	737 49
Sarnia " "		608 62	352 66	367 70	40 00	1,368 98
Sault Ste. Marie post office, &c		764 15	1,366 79	449 86	41 17	2,621 97
Simcoe "		502 20	83 40	120 60	15 00	721 20
Smith's Falls " &c		414 66	231 70	219 89	109 25	975 50
Stratford " "		709 27	514 50	242 60	58 00	1,524 37
Strathroy " "		448 71	253 85	224 04	19 80	946 40
St. Catharines " "		473 37	484 40	332 55	105 75	1,396 07
Ste. Mary's " "		431 14	315 00	189 59	35 49	971 22
St. Thomas " "		514 77	324 30	199 07	13 88	1,052 02
Toronto asst.-receiver general's and inland revenue office		951 75	383 68	251 26	31 15	1,617 84
" garage for postal motors	232 64	7 50	16 20	18 32		274 66
" custom house		5,470 39	1,150 68	499 72	99 93	7,220 72
" engineer's office	1,451 87					1,451 87
" examining warehouse	7 50	5,171 87	1,912 91	447 69	114 16	7,654 13
" immigrant sheds	1,000 00					1,000 00
" steamboat inspector's office	900 00					900 00
" post office		13,132 97	1,823 03	5,004 26	657 02	20,617 28
" " station A. (Union station).	3,600 00	2,722 85	17 58	1,224 28		7,564 71
" " " B	1,800 00	966 48	9 50	117 56	4 00	2,897 54
" " " C		323 30	178 77	284 15	16 49	802 71
" " " D		567 65	312 02	362 08	17 56	1,259 31
" " " E	990 00	333 26	4 62	171 42		1,499 30
" " " F	57 67	1,074 17	455 30	281 32	28 24	1,896 70
" " " G	1,040 00	209 93	3 64	201 93		1,455 50
Trenton "		515 45	226 10	448 68	68 75	1,258 98
Walkerton " &c		429 13	242 50	222 56	38 00	932 19
Welland "		578 87	280 11	290 93	30 00	1,179 91
Whitby "		460 60	204 60	350 22	38 00	1,053 42
Windsor engineer office	235 68					235 68
" post office, &c		1,241 90	298 82	594 87	118 69	2,254 28
Wingham "		199 92	274 37	180 84	23 15	678 28
Woodstock " &c		678 39	392 44	363 14	39 20	1,473 17
Totals, Ontario, excluding Ottawa (carried to Statement A, p. 14)	18,362 91	72,586 99	32,457 53	34,903 70	6,098 70	164,409 83
Ottawa Archives building		1,620 00	708 59	502 59		2,831 18
" astronomical observatory	525 00	1,430 00	750 30	705 52		3,410 82
" bacteriological laboratory			558 00			558 00
" experimental farm			2,470 86	384 97		2,855 83
" fuel testing building (Mines)			122 25	94 58		216 83
" old geological museum (Sussex St,)		720 00	860 68	502 01		2,082 69
" Victoria Memorial museum		8,520 00	6,655 50	299 09		15,474 59
" Major's Hill park green-house		360 00	420 00	20 57		800 57
" fisheries museum			157 00	284 17		441 17
" naval service building		840 00	510 06	232 45		1,582 51
" parliamentary dept'l bldgs	10 00	50,306 60	43,248 25	27,782 15		121,347 00
" post office		5,400 00	1,519 90	1,480 47		8,470 03

PART II—STATEMENT B.—EXPENDITURE—*Continued.*

Name of Building.	Rents.	Salaries of and Supplies for Engineers	Heating.	Lighting.	Water.	Total.
Ontario—Concluded.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ottawa Printing Bureau			13,586 97	4,702 55		18,289 52
" Royal Mint		720 00	3,286 35	287 88		4,294 23
" Supreme Court		1,560 00	1,234 66	662 85		3,457 51
" Work-shops (D.P.W.), &c		360 00	1,218 00	536 04		2,114 04
" Sundry rented buildings	179,778 47	11,580 00	6,217 64	13,197 79		210,773 90
Totals—Ottawa buildings (Carried to Statement A. p. 11)	180,313 47	83,416 60	83,525 01	51,675 68		398,930 76
Manitoba.						
Brandon experimental farm			233 19	105 03		338 22
" forestry farm	420 00			12 10		432 10
" immigrant building			391 74	107 94	23 85	523 53
" post office and Dom. lands office		904 65	36 09	930 64	100 38	1,971 67
Dauphin post office, &c		666 05	662 12	413 05		1,741 22
Emmerson post office		526 52	353 42	97 93		977 87
" immigration building			6 25			6 25
Neepawa post office, &c		808 15	275 49	233 70	3 75	1,321 00
Portage la Prairie post office		555 95	617 51	390 12	55 70	1,609 28
Selkirk post office		682 05	488 44	76 62	44 68	1,291 79
Souris post office				28 50		28 50
St. Boniface post office		672 35	325 92	85 18	6 71	1,090 16
Virden immigration building	250 00		74 25			324 25
Winnipeg custom house (old P.O.)		3,625 23	1,673 92	388 23	132 91	5,820 29
" engineer's office	732 50					732 50
" examining warehouse		5,722 26	3,121 59	394 73	534 84	9,773 42
" immigration building		114 32	3,801 83	1,515 93	541 29	5'973 37
" Indian Affairs weights and measures office	3,322 50			23 76		3,346 26
" post office	44 95	12,176 82	4,643 76	9,008 25	595 70	26,469 48
" postal station "A"	2,050 00					2,050 00
" " " "B"		745 15	593 12	206 21	19 06	1,563 54
" Railway Comm'rs office	620 00	83 50		20 80		724 30
Totals for Manitoba (carried to Statement A, p. 14.)	7,439 95	27,283 00	17,298 46	14,038 72	2,048 87	68,109 00
Saskatchewan and Alberta.						
Athabaska Ldg. immigration building	105 00					105 00
Battleford Dominion lands office	600 00		618 33	39 74		1,258 07
" immigration building			325 00	5 64		330 64
" post office		96 40				96 40
Biggar immigration building			180 80			180 80
Calgary engineer's office				9 90		9 90
" examining ware-house	3,750 00					3,750 00
" express parcels house				77 68		77 68
" immigrant building	10 00		530 20	31 55	30 00	601 75
" inland revenue	658 70			26 15		684 85
" irrigation commissioner's office	1,250 00			5 00		1,255 00
" post office		3,229 03	3,050 24	4,140 43	300 00	10,719 70
Castor immigrant building			64 87			64 87
Irvine " "	180 00					180 00
Edmonton Dominion lands office	3,300 00	367 17		521 91		4,189 08
" engineer's office	104 00					104 00
" examining ware-house	1,740 00	144 00				1,884 00
" immigrant shed	1 00		621 08	164 15	221 84	1,008 07
" inland revenue office	220 00					220 00
" post office		4,355 52	2,183 90	1,666 05	110 48	8,315 95
Edson immigrant building			30 83			30 83
Estevan post office		572 90	654 94	294 79	6 50	1.529 13

PART II—STATEMENT B.—EXPENDITURE—*Continued.*

Name of Building.	Rents.	Salaries of and Supplies for Engineers	Heating.	Lighting.	Water.	Total.
Saskatchewan and Alberta—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Entwistle immigrant building			10 00			10 00
Grouard Dominion Lands office	420 00	19 16				439 16
Gull Lake immigrant building			8 50			8 50
Humboldt Dominion Lands office	900 00		218 35			1,118 35
Herbert immigrant building	50 00		7 25			57 25
Indian Head experimental farm forestry	300 00		1,245 75	236 20	114 82	1,896 86
Kinsella immigrant building			5 00			5 00
Kerr Robert immigrant building	1 00		148 37			149 37
Lacombe experimental farm			248 60	47 34		295 94
Lloydminster immigrant building			216 80	69 46		286 26
Lethbridge Dominion lands office		11 60	121 95	161 60	25 00	320 15
" experimental farm			305 48		25 00	330 48
" immigrant building			502 92	48 67	100 00	651 59
" inland revenue building	795 46			10 45		805 91
" post office	3,300 00	614 75	588 79	15 01	50 00	4,568 55
Macleod custom house			187 70	73 26	30 40	291 36
Maple Creek post office		217 37	301 88	97 55	43 00	659 80
Medicine Hat post office		886 25		338 66	39 96	1,264 87
Moosejaw Dominion lands office	1,580 00	0 55				1,580 55
" immigration building	220 00		276 99	58 94	70 20	626 13
" inland revenue office	330 00					330 00
" post office		669 65	1,401 00	813 98	83 35	2,967 98
" railway mail service office	990 00	113 35		19 47		1,122 82
North Battleford immigrant building	226 00		419 50	103 50	19 00	768 00
North Portal " "	1 00					1 00
Prince Albert immigrant shed	120 00		160 00	32 73	20 10	332 83
" post office, &c		1,831 95	1,448 17	1,155 00	79 81	4,514 93
Red Deer post office		668 00	302 98		43 50	1,014 48
Philipps immigration building			58 40			58 40
Regina Dom. lands and registry office		1,240 20	584 97	254 32	60 00	2,139 49
" immigrant building			89 48	87 90	17 70	195 08
" post office, &c	35 00	2,058 58	2,012 06	2,598 40	94 60	6,798 64
Rosthern experimental farm			288 47			288 47
Saskatoon immigrant shed			241 50	60 56	79 35	381 41
" Dominion lands office	1,800 00					1,800 00
" post office, &c		9 8 95	1,094 64	1,111 74	311 95	3,517 28
Scott experimental farm			200 24			200 24
Stettler immigrant building	162 50		66 33			228 83
Strathcona immigrant shed	144 00		228 38	69 35	48 92	490 65
Swift Current Dom. lands office	1,080 00					1,080 00
" immigrant building	1 00		7 15			8 15
Unity immigrant building			25 84			25 84
Vanda "	172 00		48 05	5 20	2 45	227 70
Vegreville "			10 20			10 20
Vermilion "	1 00		127 00			128 00
Viking "			111 20	1 80		113 00
Wilkie "	1 00		162 95			163 95
Wainwright "			152 18			152 18
Yonker "			85 00			85 00
Yorkton Dominion lands office		1 65	8 00			9 65
" post office		559 05	518 75	500 18	54 40	1,632 38
Totals for Saskatchewan and Alberta (carried to Statement A, p. 16)	24,548 66	18,656 08	22,506 96	14,954 35	2,082 33	82,748 38
British Columbia.						
Agassiz experimental farm			66 77			66 77
Atlin post office		187 21	51 00	66 50		304 71
Cumberland post office		677 82	93 00	456 50	75 00	1,282 32
Esquimalt custom house			32 00			32 00
Fernie post office		1,015 00	202 55	393 05	56 10	1,666 70

PART II—STATEMENT B.—EXPENDITURE—*Continued.*

Name of Building.	Rents.	Salaries of and Supplies for Engineers	Heating.	Lighting.	Water.	Total.
British Columbia—Concluded.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Kamloops post office		691 05	677 51	1,052 98	48 00	2,469 54
Grande Prairie Dom. Lands office	112 00					112 00
Ladysmith post office		624 40	120 50	232 80	30 00	1,007 70
Nanaimo post office, &c		1,195 25	275 00	706 06	45 00	2,221 31
Nelson post office, &c		691 50	561 30	825 73	90 00	2,168 53
New Westminster Indian and fisheries offices		689 90	86 55	47 53	52 44	876 42
New Westminster post office		770 67	506 48	839 70	195 59	2,312 44
North Vancouver post office	900 00			51 75		951 75
Rossland post office, &c		695 95	639 73	900 60	79 64	2,315 92
Revelstoke, Crown timber agency	284 00	80 00			7 20	371 20
Vancouver exam. warehouse	2,775 00		232 38	4 35		3,011 73
" post office		10,728 39	1,884 10	4,616 96	319 95	17,549 40
" assay office (old p. o.)		95 60	453 66	281 33	84 95	915 54
" Chinese isolation hospital	300 00					300 00
Victoria examining warehouse (Ames-Holden building)	1,350 00					1,350 00
Victoria marine and Indian office (old custom house)		745 40	249 75	122 50	23 98	1,141 63
Victoria post office, &c	84 00	5,652 40	1,744 35	2,860 80	64 31	10,405 86
" " (old)		271 95	3 40	13 64	150 63	439 62
" immigrant detention building		4 70	648 45	196 81	148 42	998 38
William's Head quarantine station			5,445 00			5,445 00
Totals for British Columbia... (Carried to Statement A, p. 17.)	5,805 00	24,817 19	13,973 48	13,669 59	1,471 21	59,736 47

PART II—STATEMENT C.—**Showing the amounts loaned by Government under the authority** of Special Acts of Parliament, and upon the security of debentures of the borrowing corporation. The work upon which these funds are expended are of a quasi-public nature, and the several advances have been made upon the recommendation of the Honourable the Minister of Public Works, and after inspection by the Chief Engineer.

To whom loaned.	Parliamentary Authority.	Purpose.	Amount.
Nil			

PART III

REPORT

ON

PUBLIC BUILDINGS THROUGHOUT THE DOMINION

FOR THE FISCAL YEAR ENDED MARCH 31, 1912.

BY THE

CHIEF ARCHITECT

PUBLIC WORKS, CANADA,
CHIEF ARCHITECT'S OFFICE,
OTTAWA, August 10, 1912.

R. C. DESROCHERS, Secretary,
Department of Public Works,

SIR,—I am sending you herewith, annual report of works executed under this branch during the fiscal year ended March 31, 1912.

D. EWART,
Chief Architect.

PROVINCE OF NOVA SCOTIA.

ANNAPOLIS.

PUBLIC BUILDING.

Two new heating furnaces were installed and additions made to heating system.

The plumbing was improved and repaired, under the supervision of D. H. Waterbury, superintendent public buildings, New Brunswick.

ANTIGONISH.

PUBLIC BUILDING.

A heating coil in one of the offices on first floor was enlarged.
Work supervised by D. A. Hewitt, architect, of this branch.

BADDECK.

PUBLIC BUILDING.

A portion of the cement footpaths and platforms was undertaken and completed, and the remainder will, it is expected, be done during the present fiscal year. The well was cleaned, arched over with brick and concrete, had an iron cover and connected by iron pipe with a lift and force pump which was put in basement. A new floor was laid in the coal shed, repairs were made to window on second floor, west end; some padlocks were placed on outside doors, and well cover and glazing were repaired.

Work supervised by G. A. Bernasconi, district engineer, D.P.W.

CANSO.

PUBLIC BUILDING.

The rain water cistern was provided with a wire and wood screen to prevent rats and mice falling into the water. Minor repairs were made to tiling of lavatories and to plastering generally.

Work supervised by D. A. Hewitt, architect of this branch.

DARTMOUTH.

PUBLIC BUILDING.

New main entrance doors and a new brass letter and newspaper receiver were put in; the flagpole had a new ball and halyard and was repainted, and repairs were made to public lobby floor.

Work supervised by D. A. Hewitt, architect, of this branch.

DIGBY.

PUBLIC BUILDING.

The interior was cleaned, tinted, painted and varnished and the exterior in part painted. Repairs were made to safe, P.O. slides and wicket, plastering and woodwork. All under the supervision of D. H. Waterbury, superintendent of public buildings, New Brunswick.

HALIFAX.

APPRAISER'S BUILDING.

Repairs were made to heating apparatus, under the supervision of Wm. Bishop, inspector, Dominion Buildings, N.S.

DOMINION BUILDING.

Doors were provided for coal vaults, a concrete floor was laid in basement, the elevator shafts were cased, an additional column was built and the column plastered.

Work supervised by Wm. Bishop, inspector, Dominion Buildings, Nova Scotia.

A lavatory basin in the office of Ry. M.S. and a slop sink on the first floor were provided for the use of the caretaker.

Work supervised by D. A. Hewitt, architect, of this branch.

CUSTOM HOUSE.

To guard against damage from the possible falling of a clock weight, strong supports and box platforms filled with sand were built in the corners of the tower directly under the time and strike weights. Rooms 42, 43 and 44 were fitted up as offices for the district engineer; the outer office fitted with a counter, the walls painted and the lighting improved.

The customs sugar testing room and the post office public lobby were refloored. A new section was placed in furnace to replace a cracked one.

Work supervised by D. A. Hewitt, architect, of this department.

DETENTION HOSPITAL.

The entire woodwork and ironwork of the exterior and of the executive offices in the interior were painted. An expanded metal screen was erected separating the contagious ward from the second floor verandah, and the expanded metal guards of the basement areas were repaired. The water service pipes were extended to provide water for watering lawns, cleaning verandahs, &c.

Works supervised by D. A. Hewitt, architect, of this branch.

The men's ward was divided into two, to separate the sick men from the convalescent; a room on first floor was divided to furnish a strong room in which a lavatory basin and w.c. were fitted up, and iron bars were placed in windows; the

windows in men's ward were rehung, to improve ventilation, the plumbing overhauled, and the cement cornice repaired.

Work supervised by Wm. Bishop, Inspector of Dominion Buildings, Nova Scotia.

CATTLE QUARANTINE BUILDING.

The eastern boundary of the lane from Kemp Road to the quarantine property was fenced by posts and woven wire.

Work supervised by D. A. Hewitt, architect, of this branch.

IMMIGRATION BUILDING.

The fire escapes were painted, under the supervision of D. A. Hewitt, architect, of this branch.

KENTVILLE.

PUBLIC BUILDING.

Preparations for the installation of a gable clock were made by the removal of the windows in the caretaker's sitting room and inserting a dial frame. Dormer windows were inserted in the front corner rooms. The kitchen was subdivided by a partition of sheathing to provide a dining room.

Work supervised by D. A. Hewitt, architect, of this branch.

LIVERPOOL.

PUBLIC BUILDING.

The tower clock machinery was cleaned, the dial room was painted white, and steps were built to reach from roof space to dial room. The floor beams in the roof space were floored over to provide safe access to dial room and to hatch roof.

Work supervised by D. A. Hewitt, architect, of this branch.

LUNENBURG.

PUBLIC BUILDING.

New post office fittings, including box screen, were installed per contract; a hardwood floor was laid in public lobby of post office; new doors were hung between vestibule and public lobby, and new doors to caretaker's two south bedrooms and clothes press. A steel fire escape was erected to ensure exit from attic for caretaker and family.

Work supervised by D. A. Hewitt, architect, of this branch.

NEW GLASGOW.

PUBLIC BUILDING.

Repairs were made to plumbing, heating and flooring, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

NORTH SYDNEY.

PUBLIC BUILDING.

A concrete drain was laid in basement, the interior of building was cleaned, tinted and painted, and the outside woodwork painted; new entrance doors to post

office, new window frames and sashes, new floor to customs' entrance, rear post office entrance, also new tanks for plumbing system were provided, and repairs were made to roof and plumbing.

Work supervised by Wm. Bishop, Inspector Dominion Buildings, Nova Scotia.

A portion of the customs examining warehouse was partitioned off as a storage room, to accommodate the St. Pierre mail. The garden fence wall was repaired and the gate posts reset.

Work supervised by D. A. Hewitt, architect, of this branch.

PICTOU.

CUSTOM HOUSE.

The grounds about the building were improved, and some benches supplied. In the building, a number of rooms were floored in hardwood.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

PARRSBORO.

PUBLIC BUILDING.

On 19th October, 1911, a contract was entered into for the construction of this building, which will measure 54 feet in breadth by 43 feet in depth, will have two stories of brick with stone trimmings, a stone basement, a wooden mansard attic and a four-story and basement tower 13 feet square on the left anterior angle, situated on the corner of Main and Station streets.

The basement will contain furnace room, a fuel room, a shooting gallery, a customs store room, and inland revenue store room, a cellar and a w.c. room; the ground floor, the post office, occupying two-thirds of the space, the examining warehouse, the mail lobby and the customs entry; the first floor, the customs long room, the collector's office, the inland revenue office, an armoury, a C.O. room and three toilet rooms, while the attic is the caretaker's apartments.

The heating is to be by hot water and the lighting by electricity.

Plans, &c., prepared by the department.

Clerk of works, J. M. Gillespie.

Contractors, Falconer and McDonald.

SPRINGHILL.

PUBLIC BUILDING.

The caretaker's kitchen was painted and two bedrooms papered. A new lock was placed on main entrance door.

Improvements were made to tower clock, entrance and stairway; the heating furnaces were repaired, a new door supplied, and repairs made to joinery and glazing.

Work done in part under the supervision of D. A. Hewitt, architect, of this branch, and the remainder under that of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

SYDNEY.

PUBLIC BUILDING.

Iron handrails were provided at the three main entrance steps.

Work supervised by D. A. Hewitt, architect, of this branch.

TRURO.

PUBLIC BUILDING.

Improvements of main entrances were made, including the placing of electric lamps over entrance; the interior of the building, excepting the caretaker's apartments, was cleaned, tinted, painted and varnished; additions were made to ground floor lighting; the street letter boxes were painted, and repairs were done to floors, roof, furnace and smokestack.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

WOLFVILLE.

PUBLIC BUILDING.

On August 8, 1911, a contract was entered into for the construction of this building, on a plot of ground on the north side of Main street, on which it has a frontage of 171 feet by a depth of 165 on the east side and 212 feet on the west side.

The building is of cut stone, two stories and basement, having a breadth of 52 feet by a depth of 60 feet and consists of a basement containing a furnace room, a fuel room, an armoury storage room, a customs' storage room and a janitor's storage room; a ground floor, the front two-thirds of which is the post office, public lobby and working space, and the rear one-third, the postmaster's office, customs examining room, stairway hall, lavatory and vestibule, and the first floor, customs long room, armoury, C.O. room, stairway hall, lavatory room, bath room and four rooms for caretaker.

The style is English renaissance of the Ionic order, an order consisting of coupled engaged columns with cornice and balustrade, or continued on both sides and front. Excepting the partitions and floor of basement, which are brick and concrete respectively, the floors, stairs, partitions and roof are of wood; the roof covered with tar and gravel.

Heating is by hot water and lighting by electricity.

Plans, &c., prepared by this department.

Clerk of works, Clarence H. Borden.

Contractor, A. Hood.

WINDSOR.

PUBLIC BUILDING.

Repairs to combination locks on vault doors of post office and customs long room.

Repairs to post office work room furniture.

Work supervised by Wm. Bishop, Inspector Dominion Buildings, Nova Scotia.

The felt and gravel roofing of main deck roof was renewed and the hatch in deck roof was covered with galvanized iron, under the supervision of D. A. Hewitt, architect, of this department.

YARMOUTH.

PUBLIC BUILDING.

A plot of ground on Main street, south of government property, measuring 30 feet on Main street by 140 feet 4 inches in depth, was purchased, the vendor reserving a right of way over 20 feet, by the breadth of the property, in the extreme rear.

PROVINCE OF PRINCE EDWARD ISLAND.

CHARLOTTETOWN.

DOMINION BUILDING.

Ornamental lampposts and lamps were put up and connected in grounds; new furniture was supplied to customs offices in annex; improvements were made to the electric wiring; the Savings Bank offices were painted and repairs were done to concrete steps, tiling of halls, furniture and fittings.

The grounds about the building were tended and improved.

The work was done under the supervision of D. H. Waterbury Superintendent of Public Buildings, New Brunswick.

GEORGETOWN.

PUBLIC BUILDING.

The heating furnace being too small was exchanged with the manufacturer for a larger, and some improvements were effected in the heating apparatus, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

SOURIS.

PUBLIC BUILDING.

A fire-escape was erected, an iron fence was put up on boundary and the location of an outhouse was changed, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

SUMMERSIDE.

PUBLIC BUILDING.

The caretaker's apartments were cleaned, tinted, papered and painted; the expansion tank and rain water conductors were renewed, and repairs were made to floor and plumbing, all under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

ARMOURY.

On July 5, 1911, a contract was entered into for the construction of this building which is situated on a plot of ground bounded by Summer street, Fitzroy street, Foundry street and Spring street, and having frontages of 125 feet 6 inches, 230 feet, 230 feet, and 130 feet respectively; it is placed fronting, and 40 feet from Summer street and has a frontage of 30 feet by a depth of 38 feet.

There are two stories of brick on a concrete stone-faced basement with partitions, floors, roof and stairs of wood, excepting the basement partitions, which are brick, the basement floor of concrete and the roof covering sheet metal.

The basement has a furnace room, a fuel room, a store room, a lavatory and a staircase hall; the ground floor, an assembly room, a company armoury, a company

C.O. room; rooms Nos. 1 and 2, two vestibules and a stairway; the first floor: a lecture room, rooms 3 and 4 and a stairway. The heating is by hot air and the lighting by electricity.

Plans, &c., prepared by this department.
Clerk of works, M. MacLeod.
Contractors, M. F. Schurman & Co.

TIGNISH.

PUBLIC BUILDING.

This building, a contract for the construction of which was entered into on July 18, 1911, is a two-story brick building on a stone basement consisting of a main portion 42 feet frontage on Main street by 41 feet in depth inclusive of a four-story and basement tower 13 feet 6 inches square, on the right anterior angle and exclusive of an adjunct in rear 20 feet square on plan. Excepting that the basement is floored with concrete and partitioned with brick, the floors, partitions, stairs and roof are of wood. Drainage is to a septic tank in yard, lighting is by electricity and heating by hot water.

The basement contains the furnace room, cellar and fuel room; the ground floor, the post office in the main portion, and the examining warehouse in the adjunct, while the first floor, main building, contains two rooms and toilet for Inland Revenue, 4 rooms and bath room for caretaker, and the adjunct contains offices.

Plans, &c., prepared by this department.
Clerk of works, Frank S. Gaudet.
Contractor, John M. Clark.

PROVINCE OF NEW BRUNSWICK.

BATHURST.

PUBLIC BUILDING.

A new concrete floor was laid in lavatory, and repairs were made to tiling, safe and furniture under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

CAMPBELLTON.

PUBLIC BUILDING.

This building which was described in a previous report is nearly completed, and is expected to be occupied during the next fiscal year.

Plans, &c., prepared by this department.
Clerk of works, John Quinn.
Contractor, James Reid.

The temporary post office and the caretaker's quarters were improved and enlarged and had additional fittings, furniture, storm sashes, &c., provided.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

CHATHAM.

PUBLIC BUILDING.

A hardwood floor was laid in public lobby and repairs were made to roof, eaves, gutters and down pipes, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

CHATHAM.

MIDDLE ISLAND QUARANTINE.

Additional improvements to the cellar and drains were effected, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

DALHOUSIE.

PUBLIC BUILDING.

A new furnace grate was supplied and repairs were effected to furnace, heating apparatus, office doors and joinery, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

FAIRVILLE.

PUBLIC BUILDING.

This building, a contract for the construction of which was signed on May 8, 1911, has two stories of brick on a stone foundation, fronts on Main street and measures 44 feet in breadth by 45 feet in depth, inclusive of a 4-story and basement tower 12 feet square on the right anterior angle. Excepting that the basement is floored in concrete and partitioned in brick, the partitions, floors, stairs and roof are of wood, the roof covered with metal.

The drainage is to a septic tank in yard, the heating is by hot water and the lighting by electricity.

The basement contains the furnace room, fuel room, staircase hall and storage cellar; the ground floor the post office, and the first floor 2 offices, a staircase hall, a toilet room, three rooms for the caretaker and a bath room.

Plans, &c., prepared by this department.

Clerk of works, Murray W. Long.

Contractor, R. A. Corbett.

FREDERICTON.

PUBLIC BUILDING.

A telephone cabinet was built in the delivery room and improvements were made to the lighting fixtures, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

HARTLAND.

POST OFFICE AND ARMOURY.

This building which was described in my report of last year is completed.

GRAND FALLS.

PUBLIC BUILDING.

This building, a contract for the construction of which was entered into April 17, 1912, has a frontage on Court street at the intersection of Sheriff street, and is a two-story brick building, with a five-story angle tower, on a concrete stone-faced basement, consisting of a main portion 42 feet square on plan and an adjunct in rear 28 feet broad by 20 feet deep. In the basement, the floor and a number of the partitions are

concrete and the remaining partitions brick, excepting which, the floors, partitions, roofs and stairs are of wood, the roof covered on slopes with sheet metal and on deck with tarred felt and gravel. The front entrance steps are of stone, the public lobby floor in post office is laid in tile and the mail lobby in concrete. The mail lobby platform and steps are of concrete. The ground floor of the main building is for the post office, and of the adjunct, for the examining warehouse; the first floor of the main portion is for quarters, excepting one office in rear, for the customs, and of the adjunct for a customs' long room. In the basement of the main portion are the furnace room, W.C. room and customs store room, while in the adjunct, are a fuel room and a pump room. The water is drawn by a pumping engine, the drainage is to a cesspool in the rear of yard; the heating is by hot water and the lighting by electricity.

Plans, &c., prepared by the department.
Clerk of Works, T. C. Dixon.
Contractors, Powers & Brewer.

HILLSBORO.

PUBLIC BUILDING.

This building, a contract for the construction of which was entered into on August 25, 1911. has a breadth of 60 feet by a depth of 40 feet and is situated on a lot on Main street, abutting on the line of the S. & H. railway.

There are two stories of brick with cut and carved stone trimmings and on a stone basement. Excepting the partitions and floor of basement, which are brick and concrete respectively, and the floor of the public lobby, vestibule, mail lobby and toilet rooms, which are tile, the floors, partitions, stairs and roof are of wood.

The basement contains a furnace room, a fuel room and a store room; the ground floor the post office which occupies two-thirds of the breadth by the depth of the space, the customs one-third of the breadth by half the depth and the stairway hall, vestibule, toilet room and mail lobby, the remainder, while the first floor contains staircase hall, ladies toilet and five rooms and bathroom for caretaker.

Lighting is by electricity and heating by hot water.
Plans, &c., prepared by this department.
Supervising architect, W. E. Reid.
Clerk of Works, Beecher Steeves.
Contractor. O. J. Dunham.

MARYSVILLE.

PUBLIC BUILDING.

The interior was tinted, painted, varnished, had new hardwood floors laid in several rooms, a new smoke stack to furnace, linoleum for kitchen floor, additions to plumbing and repairs to original plumbing and sewer connections.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

NEWCASTLE.

PUBLIC BUILDING.

The interior woodwork was cleaned, tinted, painted and varnished and the exterior woodwork varnished. A new sink, new delivery, plate and window glasses for box fronts were supplied and repairs were effected to furnace grates, plumbing, joinery and glazing.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

RICHIBUCTO.

PUBLIC BUILDING.

The interior was cleaned, tinted and painted, and the exterior woodwork painted. Some door locks, oil cloths, window screens and a weather cap for chimney were supplied, some sashes were recorded and repairs were made to plumbing, fence and coal platform.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

MONCTON.

PUBLIC BUILDING.

The addition referred to in my report of last year is practically completed. The halls and offices throughout the building were cleaned, tinted, painted and varnished, linoleum was provided for offices, additional window shades were supplied, the external masonry was pointed, the chimneys repaired, the decks recovered with tar and gravel and minor usual repairs made to joinery, furniture, &c.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

PARTRIDGE ISLAND, ST. JOHN.

QUARANTINE STATION.

A new verandah was built at doctor's residence, new sills were put in and concrete posts were erected to support same, gates and smoke pipes for furnace were suppplied as also new room doors and repairs were made to roof, down pipes and woodwork generally here and at the various buildings, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, N.B.

ST. JOHN.

ARMOURY.

This building which was described in my report of last year is under construction. Since the aforesaid description was prepared, it was decided to build an adjunct for cavalry armouries along the entire south side of the main hall, similar to that on the north side, and continuous with the adjuncts at each end of south side referred to in said description.

Plans, &c., prepared by this department.

Contractor, Michael Sullivan.

Architect in charge, Mott; clerk of works Neil Brodie.

IMMIGRATION BUILDING.

The firing room had planking repaired and recaulked; partitions were run on upper floor to make additional rooms for immigrants; a new toilet room with two closets was constructed; a new smoke stack was erected; water conductors were renewed; the matron's apartments and a number of the rooms for the immigrants were cleaned, tinted, painted, papered and varnished; some furniture, linoleum, rugs, window shades and hose were supplied; some glazing was done and repairs were effected to plumbing, joinery, ranges, electric bells, lighting and glazing.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

CANADIAN PACIFIC RAILWAY.

NO. 4 SHED.

This building had new partitions run, partitions altered, woodwork repaired and window shades supplied.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

IMMIGRATION HOSPITAL.

A gasoline stove and fireman's tools were supplied, and repairs were effected to plumbing, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

CUSTOM HOUSE.

The heating boilers were retubed; a desk platform was made for warehouse room; the meteorological offices and those of the resident engineer were wired and had fixtures for electric lighting; the north wing halls and customs centre hall were painted, and the main doors and entrances cleaned and varnished; the glass of skylight in draughting room was replaced; a new lavatory basin was fitted in weights and measures office; flags, fire-hose, furniture and door locks were supplied; window sashes were recorded and repairs were made to pointing, glazing, joinery, boilers, masonry, time ball apparatus, hydraulic hoist, shutters, copper roof, flashings, clocks, electric bells and works generally.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

POST OFFICE.

Sundry articles of furniture were supplied, including letter carriers' stools, desks, filing cases for railway mail service, also floor rugs and fire hose. The roof cresting was painted, the hallway and lobby were cleaned, tinted and painted, and the lobby screen, window casings and hardwood generally, were varnished. A new light was placed in front of building, new lamps and shades were supplied, some glass for box fronts supplied and some lights of glass in offices relettered. Repairs were made to heating pipes, plumbing, electric wiring, bells, speaking tubes, letter slides, receptacles, telephones, tower clock, radiators, iron chests, iron shutes, eaves gutters, down pipes, door locks, masonry, elevator foundation, clocks, trucks, painting and glazing. The heating boiler was retubed, and new halyards were supplied for mast.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

SAVINGS BANK.

Repairs were effected to boiler, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

ST. STEPHENS.

PUBLIC BUILDING.

The interior was cleaned, tinted, painted and varnished; a new hardwood floor was laid in customs; the main entrances and doors were improved and the floor and screen finished; portions of the interior walls were strapped, lathed and plastered, and repairs were made to masonry of building, and to gas fitting, under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

SUSSEX.

PUBLIC BUILDING.

Repairs were made to plumbing, under the supervsion of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

TRACADIE.

LAZARETTO.

The stone vegetable storehouse was reroofed, the walls repainted, and the interior improved and sheeted. The septic tank was improved and an additional cesspool built. An additional heating coil was provided for one of the rooms.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

WOODSTOCK.

PUBLIC BUILDING.

The greater part of the interior was cleaned, tinted, painted, and had varnishing done. There were supplied, a new hose reel, new lavatory basins for post office, fly screens for windows, new blinds for customs and post office, new wire cable for tower clock, and some articles of furniture for post office. Repairs were made to electric wiring, glazing, joinery, floors, delivery windows and plumbing.

Work done under the supervision of D. H. Waterbury, Superintendent of Public Buildings, New Brunswick.

PROVINCE OF QUEBEC.

ACTON VALE.

PUBLIC BUILDING.

The interior of the building underwent a thorough cleaning, under the supervision of G. S. Gingras, Montreal, P.Q.

ARTHABASKA.

PUBLIC BUILDING.

This building, a description of which was contained in my report of last year, is still in progress of construction.

Plans, &c., prepared by this department.

Clerk of works, George Spenard.

Contractors, Paquet & Godbout.

DUNDEE.

PUBLIC BUILDING.

The ground about the building was levelled and enclosed by an iron fence, under the supervision of G. S. Gingras, Montreal, P.Q.

FARNHAM.

POST OFFICE.

A concrete footpath was laid along the front of the property; the stone front entrance steps were removed and replaced by concrete steps; the exterior woodwork and the galvanized iron roof covering were painted and the caretaker's quarters cleaned. Work supervised by G. S. Gingras, Montreal, P.Q.

FRASERVILLE.

PUBLIC BUILDING.

The wooden footpaths on three sides of the property were removed and replaced by others of granolithic, and the caretaker's quarters were cleaned, tinted and repainted. Work supervised by G. S. Gingras, Montreal, P.Q.

ARMOURY.

The building, which was described in my report of last year is about completed.
Plans, &c., prepared by this department.
Clerk of works, J. N. Anctil.
Contractor, Philippe Dumont.

GROSSE ISLE QUARANTINE STATION.

MEDICAL SUPERINTENDENT'S RESIDENCE.

The extension from this building which was started late in 1911, was completed. It measures on plan, 16 feet by 20 feet, is of two stories and has a verandah all about it.

CHAPLAIN'S RESIDENCE.

The stone foundations were repaired and the wooden foundations of the kitchen and porch were replaced by masonry.

ASSISTANT MEDICAL SUPERINTENDENT'S RESIDENCE.

A concrete floor was laid in cellar; the plastering throughout the building was renewed, the walls and ceilings papered, the woodwork was cleaned and painted and the hardwood cleaned and varnished. The verandah flooring was renewed and repairs were made to verandah foundation, roof, sewer pipes and clapboarding.

Work supervision by A. R. Décary, district engineer, Quebec, P.Q.

HOSPITAL.

Two hot-air furnaces were installed, which entailed the formation of a cellar under the ground floor and the consequent underpinning of the foundation walls of the building in the neighbourhood of the furnace pit. Repairs were made to chimneys and plastering.

Work supervised by A. R. Decary, district engineer, Quebec, P.Q.

STAFF LODGINGS.

The old shed, east of the middle building, was repaired and had the roof covered with ruberoid Four sets of five rooms each, with one bath room and one W.C. room on ground floor, and an undivided attic, each lodging measuring 25 feet by 84 feet were made in east end of shed.

Work supervised by A. R. Decary, district engineer, Quebec, P.Q.

DRAINAGE WELL.

Repairs were made to sewer pipes and the well cleaned, under the supervision of A. R. Décary, district engineer, Quebec, P.Q.

EAST END RESERVOIR.

The reservoir was emptied and cleaned and the roof was renewed. Work supervised by A. R. Décary, district engineer, Quebec, P.Q.

IBERVILLE.

PUBLIC BUILDING.

The interior of the building was cleaned, tinted and repainted.
Work supervised by G. S. Gingras, Montreal, P.Q.

JOLIETTE.

PUBLIC BUILDING.

Some of the plumbing was renewed and the plumbing generally overhauled and improved, under the supervision of G. S. Gingras, Montreal, P.Q.

L'ASSOMPTION.

PUBLIC BUILDING.

A fire-escape ladder was erected on the rear of the building, under the supervision of G. S. Gingras, Montreal, P.Q.

LACHUTE.

PUBLIC BUILDING.

A fire-escape balcony and ladder was placed at the rear of the building and the top of brick wall and chimney were repaired and repointed. Work supervised by G. S. Gingras, Montreal, P.Q.

LONGUEUIL.

PUBLIC BUILDING.

The whole of the interior was cleaned, tinted and repainted, under the supervision of G. S. Gingras, Montreal, P.Q.

LEVIS.

ARMOURY.

On June 19, 1911, a contract was entered into for the erection of this building on a plot of land at the intersection of St. David and St. Antoine streets, and is to be placed 30 feet back from the southern boundary of St. David street, the middle line of the building to be in the same straight line as the middle line of St. Albert produced.

The building is to be of two stories of brick with stone dressings on a stone basement surmounted by an unfinished cockloft, and has a frontage of 112 feet by a depth of 103 feet exclusive of a small projection on the southwest corner. The front 58 feet of the depth has an excavated basement, but none under the rear 45



Elora, Ont., public building.



Renfrew, Ont., public building.

feet, which is to be the large gun shed. In the basement there are to be a furnace room, a fuel room, a bowling alley, a shooting gallery, two storerooms and a lavatory; on the ground floor three infantry armouries, two artillery armouries, a cavalry armoury, a cavalry saddle and harness room, two C. O. rooms, a stairway hall, an entrance vestibule and a corridor in the rear, the gun-shed which will extend the entire breadth of the building; on the first floor are to be one C. O. room, an officers' mess room, a sergeants' mess room, a band room, two artillery armouries, the caretaker's quarters, and in the rear over the gun-shed and extending the breadth of the building, a lecture room.

With the exception of the walls, which are to be brick with stone dressings, the partitions, which are to be brick, the floors of basement, which are to be concrete, and the stairways, roof principals of lecture room and the large beams supporting joists, which are to be iron, the construction is mainly of wood.

Heating is by hot water and lighting by electricity.

Plans, &c., prepared by this department.

Clerk of works, N. Gosselin.

Contractors. The Ideal Construction Co.

PUBLIC BUILDING.

The interior was cleaned, the walls and ceilings tinted, the woodwork painted, the fittings, furniture and floors were cleaned and varnished, and the external woodwork painted. Repairs were effected to plumbing, joinery and heating furnaces.

Work done under the supervision of A. R. Décary, resident engineer, Quebec, Que.

MARIEVILLE.

PUBLIC BUILDING.

This building, for the construction of which a contract was entered into September 29, 1910, has two stories and attic of brick, on a stone basement, measuring 37 feet front by 39 feet deep, having a one story adjunct, with unexcavated basement, measuring 21 feet by 29 feet in rear, fronting on the east side of Ste. Marie street, and flanked by the south side of Dupont street. Excepting the basement, which has concrete floor and brick partitions, the floors, partitions, stairs and roof are of wood. The basement is for furnaces and fuel; the ground floor of the main portion is for post office, stairway hall, mail lobby and two entrance vestibules, and of the adjunct, for the examining warehouse; the first floor for customs long room, three offices, lavatory and stairway hall, and the attic for caretaker's apartments. There is an angle tower four stories in height. Heating is by hot water and lighting by electricity.

Plans, &c., prepared by this department.

Clerk of Works, Avila Carreau.

Contractors, E. & R. Lachance.

MEGANTIC.

PUBLIC BUILDING.

This building which was described in my report of last year is still in progress of construction.

Plans, &c., prepared by this department.

Contractors, Paquet & Godbout.

MONTMAGNY.

PUBLIC BUILDING.

The roof, plaster, ceilings and walls were repaired and the caretaker's quarters cleaned, tinted and painted.

Work supervised by G. S. Gingras, Montreal, P.Q.

MONTREAL.

ST. LOUIS DU MILE END POSTAL STATION 'E.' P.O. ADDITION.

The adjunct referred to in my last year's report has been completed, under the supervision of H. N. Lymburner, Superintendent of Public Buildings, Montreal, P.Q.

CUSTOM HOUSE.

The tiling of the hallway, which was out of repair, was taken down and the hallway was retiled. Extensive repairs were made to the roof and three skylights were renewed.

Work done under the supervision of H. N. Lymburner, Superintendent of Public Works, Montreal, P.Q.

EASTERN POSTAL STATION 'C.'

On May 20, 1911, a contract was entered into for the construction of this building, which is situated on the corner of St. Catherine and Plessis streets, on which it has frontages of 67 feet and 93 feet respectively.

It consists of a square main building 67 feet in breadth by 75 feet in depth and a two story adjunct in rear, having a frontage of 18 feet by a depth of 30 feet.

The entire frontage on St. Catherine street, by 17 feet in depth, 55 feet of the frontage of Plessis street, by 17 feet in depth and 37 feet of a return on the right anterior angle, by 20 feet in breadth, are two stories and basement, the remainder of the main portion being one story. The ground floor of the main portion is the post office, of the annex, the garage; on the first floor, main portion are living rooms, and on first floor adjunct, a lavatory. The basement has a 60 feet by 60 feet auxiliary workroom, a record room, a furnace room, a stairway hall, a coal room, a room for ashes and a closet.

There is a clock turret surmounting the angle at the intersection of the streets.

The style adopted is an ornate type of French Renaissance of the Ionic and Tuscan orders. The fronts of the two story portions are in cut stone, the remainder in brick with cut-stone trimmings. The partitions are of brick and of terra-cotta, and the construction largely of non-combustible materials.

Plans and specifications prepared and work supervised by Joseph Perrault, architect, Montreal, P.Q.

Contractors, G. Séguin & Guindon.

EXAMINING WAREHOUSE.

Eighty squares of metal roof which the gases from the chimney had corroded, were renewed and the chimney was heightened to avoid a repetition of the loss; 23 squares of the flooring, where heavy goods are handled, were renewed and the concrete under repaired; additions were made to the heating apparatus and repairs made to the 6 freight elevators. Repairs were effected to heating, plumbing, elevators, pump, and glazing. Work done under the supervision of H. N. Lymburner, Superintendent, Montreal, Que.

EXPRESS BUILDING, D'YOUVILLE PLACE.

The front wall of one of the side street buildings was rebuilt; an office partition was erected for the appraisers and one for the checker; additions were made to the lighting service and portions of the floor have been repaired, all under the supervision of H. N. Lymburner, Superintendent of Buildings, Montreal, P.Q.

CUSTOMS CANAL OFFICE.

This is a small office used during summer months. A few changes in partitions were made and a new oilcloth provided, under the supervision of H. N. Lymburner, Superintendent of Buildings, Montreal, P.Q.

GENERAL POST OFFICE, ST. JAMES STREET, ADDITION.

When the addition was ready, all the general post office staff was removed thereinto from the original building which necessitated an unusually large expenditure for temporary partitions, temporary elevator from ground to first floor and temporary alterations of the heating system. A sterilizing plant to supply boiled potable water at eleven different points, for the officials, has been fitted up, and the street letter boxes were painted.

POSTAL STATION 'B' (St. Catherine West).

The roof of the addition was renewed and alterations made to the hot water supply pipes, under the supervision of H. N. Lymburner, Superintendent of Public Buildings, Montreal, P.Q.

POSTAL STATION 'C' (Amherst Street).

This is a rented building. A small temporary wood addition was constructed under the supervision of H. N. Lymburner, Superintendent of Public Buildings, Montreal, P.Q.

NOMININGUE.

IMMIGRATION BUILDING.

The interior surface of the foundation walls under kitchen were cemented.
Work supervised by G. S. Gingras. Montreal, P.Q.

PIERREVILLE.

PUBLIC BUILDING.

A gallery or platform with hood was erected at the rear entrance of the building. Work supervised by G. S. Gingras, Montreal, P.Q.

QUEBEC.

CITADEL—H. E. QUARTERS.

The roof was painted and minor repairs were made to plumbing, electric lighting and electric bells, under the supervision of A. R. Décary, district engineer, Quebec, P.Q.

CUSTOM HOUSE—RESTORATION.

This work, which was described in my report of last year, has since been in continuous progress and is expected to be completed at an early date.

Plans, &c., prepared and work supervised by this department.

Superintending architect, René LeMay.

Contractors, Gosselin & Dubé.

QUEBEC—(*Continued.*)

DETENTION HOSPITAL.

Two floor drains for W.C.'s and one Emond water filter were installed; 36 chairs, 1 desk, 1 ventilator and 1 lounge were supplied; 24 bibbs were renewed in wash room and repairs were effected to disinfection building, sidewalk, heating furnaces, joinery, water pipes, roof, eaves-troughs, &c., all under the supervison of A. R. Décary, district engineer, Quebec, P.Q.

EXAMINING WAREHOUSE.

The footpaths about the building were relaid and with a stone curb. Repairs were made to joinery, electric lighting, water service and heating system.

Works supervised by A. R. Décary, district engineer, Quebec, P.Q.

IMMIGRATION BUILDING.

A large stationery cupboard was built in attic; 2 galvanized iron scuppers were put in; a kitchen range was supplied and repairs were made to plastering, plumbing, joinery, electric lighting, stoves, heating furnaces, glazing and roof.

In the American section, partitions were altered to form an office for medical inspection.

Work supervised by A. R. Décary, district engineer, Quebec, P.Q.

INLAND REVENUE OFFICES.

Seven awnings were provided for and fixed to as many windows, under the supervision of A. R. Décary, district engineer, Quebec, P.Q.

MARINE BUILDING.

The office of the marine agent was provided with two office armchairs and two filing cabinets, under the supervision of A. R. Décary, district engineer, Quebec, P.Q.

LOUISE EMBANKMENT.

IMMIGRATION BUILDING.

This building for which a contract was entered into, December 15, 1911, measures 780 feet in length by 80 feet in breadth, and is placed parallel to and alongside the Canadian Pacific Railway tracks. 80 feet in length of the outermost end narrows in steps to 40 feet in breadth owing to the arrangement of the railway tracks, and this portion contains the administration offices. It is a two-story building framed with iron and having iron columns every 20 feet in length and breadth of the building, the two stories in height having ceilings of 16 feet and 15 feet 3 inches and covered by a flat roof. The construction of walls, floors, and roof is steel and concrete. The administration portion of the building is heated by direct hot water heating, but the remainder is heated and ventilated by a hot blast steam heating apparatus. Lighting is by electricity.

Plans, &c., prepared by this department.
Resident architect, J. R. Ouellette.
Contractor, Chas. Edward Deakin.

POST OFFICE.

Alterations of letter racks were made to give more space for the addition of 3 sorting case tables; the rear entrance winter porch was renewed; there were furnished 6 blinds, 1 brass railing, 2 portable electric lamps, 3 blinds, 4 curtain shades, 1 entrance door lock, 1 cupboard, 1 desk, 1 double desk, 1 step and 36 letter-box locks, 10 windows

on north side were repainted and repairs were effected to elevator, joinery, lighting service, plumbing and furnaces.

Work supervised by A. R. Décary, district engineer, Quebec, P.Q.

ST. ROCH'S (QUEBEC) POST OFFICE.

The interior of the postmaster's apartments was papered and painted and had the floors cleaned and revarnished; general repairs were made to plumbing and electric pump, under the supervision of A. R. Décary, district engineer, Quebec, P.Q.

RIGAUD.

POST OFFICE.

This building, which was described in my last year's report, is still in progress of construction.

Plans, &c., prepared and work supervised by Ludger Lemieux, architect, Montreal, P.Q.

Contractor, Théo. Bélanger.

SHERBROOKE.

PUBLIC BUILDING.

Portions of the building were cleaned, tinted, repainted and revarnished. The office fittings of the M.O. office were improved, the fittings of the warehouse renewed and the interior of the warehouse repaired and improved generally. Work supervised by G. S. Gingras, Montreal, P.Q.

RIMOUSKI.

PUBLIC BUILDING.

The entire attic and the customs offices first floor were laid in hardwood and additions were made to plumbing in caretaker's quarters.

Work supervised by G. S. Gingras, Montreal, P.Q.

ROBERVAL.

PUBLIC BUILDING.

This building which was described in my last year's report, is still in progress of construction.

Plans, &c., prepared by this department.

Clerk of works, Alphonse Parent.

Contractor, L. B. Lachance.

ROCK ISLAND.

PUBLIC BUILDING.

This building, for the construction of which a contract was entered into August 12, 1911, is two stories, of brick on a stone basement, consisting of a main portion 40 feet square, including a four-story tower on right anterior angle and a wing in rear 26 feet by 23 feet, is situated on a triangular plot of land at the intersection of School and Derby streets, having frontages thereon of 154 and 166 feet respectively and a base of 86 feet 6 inches.

Excepting the floor of basement, which is concrete, and the basement partitions, which are brick, the floors, partitions, stairs and roof are of wood.

The basement will contain furnace room, coal room, storage room and staircase hall; the ground floor, the post office and men's toilet; in the main portion and in the wing, the examining warehouse and weights and measures, while on the first floor are customs long room, collector's office, inland revenue office, ladies' toilet, public lobby and 4 rooms and bath room for the caretaker.

The drainage is to a septic tank in yard; the heating is by hot water, and the lighting by electricity.

Plans, &c., prepared by this department.

Clerk of works, B. C. Drew.

Contractor, N. A. Beach.

ST. HENRI.

POST OFFICE.

The brick adjunct, which was described in my report of last year, was completed, under the supervision of H. N. Lymburner, Superintendent of Buildings, Montreal, P.Q.

ST. JEROME.

PUBLIC BUILDING.

Ice guards were fitted to edge of rear roof. The galvanized iron roof of the annex was renewed. Portions of the exterior brick walls were repointed, under the supervision of G. S. Gingras, Montreal, P.Q.

ST. LAMBERT.

PUBLIC BUILDING.

This building, for the construction of which a contract was entered into September 25, 1911, is to be constructed on a site fronting on the avenue and opposite the public square, extending from Notre Dame avenue on the right to Mercille avenue on the left.

It is to be a two-story brick building with cut stone trimmings and on a cut stone foundation, 53 feet in breadth by 45 feet in depth. Excepting in basement, where floor and partitions are concrete and brickwork respectively, the floors, partitions, stairs and roof are of wood. The heating is by hot water, and the lighting is by electricity.

The basement is to contain the furnace room, fuel room, cellar, toilet room and stairway hall; the ground floor the post office, stairway and mail entrance, and the first floor the caretaker's apartments.

Plans, &c., prepared by this department.

Contractor, Eugène Patenaude.

SHAWINIGAN FALLS.

PUBLIC BUILDING.

A contract for the construction of this building, which is to be constructed at the intersection of Fifth street and Station avenue, was entered into on August 4, 1911. It is to have two stories of brick on a stone basement and consist of a main portion 61 feet broad by 52 feet deep and a lateral right wing 26 feet 6 inches broad by 30 feet deep. The basement floor partitions and those in main building ground

floor, as also the two main partitions first floor, are brick; the basement floor concrete; the floors of lavatories and of public lobby tile, and the remaining floors, roof, stairs and partitions are wood.

The basement contains a furnace room, a coal room, a vault, a janitor's cellar, a stairway passage and cellars; on the ground floor main portion are the post office, mail entrance, vault, two stairways, a lavatory, a weights and measures office, an inland revenue office, a vestibule, &c., and in the wing the examining warehouse; on the first floor are the customs long room, record room, collector's office, clerk's office, lavatory, store room, vault and stairway in the main building, while in the wing are the caretaker's apartments.

Heating is by hot water.

Plans and specifications prepared and work supervised by Asselin & Augé, architects.

Contractor, A. Durand.

THETFORD MINES.

PUBLIC BUILDING.

Alterations of the heating mains were made and the apparatus repaired.

Work supervised by Wm. Mansfield, Inspector of Heating and Plumbing, Ottawa, Ont.

VICTORIAVILLE.

PUBLIC BUILDING.

New footpaths about the building were constructed.

Work supervised by G. S. Gingras, Montreal, P.Q.

PROVINCE OF ONTARIO.

AMHERSTBURG.

PUBLIC BUILDING.

New locks were put on front doors and a new sink fitted in post office.

Work supervised by Thos. H. Hastings, Clerk of Works, Toronto, Ont.

BELLEVILLE.

PUBLIC BUILDING.

The stone entrance steps were redressed, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

BERLIN.

PUBLIC BUILDING.

The clock tower platform was recovered with galvanized iron, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

BOWMANVILLE.

PUBLIC BUILDING.

The concrete footpaths about the building were repaired under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

BRANTFORD.

PUBLIC BUILDING.

Six iron stools were supplied to the post office and repairs were made to plumbing, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

DRILL HALL AND PARADE GROUND.

A tar macadam pavement was laid along the boundary of the parade ground and the drill hall property, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

BROCKVILLE.

PUBLIC BUILDING.

A railway truck was provided, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

CAYUGA.

POST OFFICE.

The concrete sidewalk was repaired and a breathing pipe connected to drain, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

CLINTON.

PUBLIC BUILDING.

The interior woodwork, walls and ceilings were cleaned, painted and tinted, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

CHESLEY.

PUBLIC BUILDING.

On October 18, 1911, a contract was awarded for the construction of this building on a plot of ground 104 feet square, on Main street, south of and adjoining the City Hall property.

There is a two-story main portion 46 feet by 40 feet of brick with stone trimmings, on a stone foundation and surmounted by a wooden mansard attic, also a one-story adjunct 32 feet by 30 feet, of brick with stone trimmings and on stone basement. The basement floor is to be of concrete, the basement partitions brick, and the bath and toilet rooms are to be floored with tile, but elsewhere the floors, partitions, roofs and stairways are to be of wood. The basement is to be for heating apparatus, fuel and storage; the ground floor is to have the post office, a brick vault, a lavatory room, a stairway hall in the main portion and in the adjunct an armoury, a C.O. room and a stairway to basement; the first floor 6 rooms, a bathroom, a corridor and a stairway hall, and the attic 5 rooms, a corridor and a staircase hall.

Heating is to be hot water, and lighting electric.
Plans, &c., prepared by this department.
Contractors, Gilpin Bros.
Clerk of works,

DRESDEN.

PUBLIC BUILDING.

On April 12, 1911, a contract was entered into for the construction of this building situated on St. George street, where it intersects Main street; it will have two stories of brick on a stone basement, a 4-story brick tower on the street corner and an unfinished cockloft.

The building is to be 43 feet square and the angle tower, included. is to be 13 feet square. Excepting the basement partitions of brick and the basement floor of concrete, the partitions, floors, stairs and roof are to be of wood. The ground floor will contain the post office, a toilet room, a mail lobby; the first floor an inland revenue office and living apartments, and the basement. the heating furnace, fuel and stores.

Heating is to be by hot water, lighting by electricity, and drainage to a septic tank in yard.

Drawings, &c., prepared by this department.
Contractor, W. E. Clark.

DUNDAS.

PUBLIC BUILDING.

On September 18, 1911, a contract was entered into for the construction of this building, on a site fronting on the south side of King street and flanked by McMurray and Foundry streets, a plot 125 feet by 100 feet.

The building has a frontage of 80 feet by a general depth of 40 feet in addition to which 40 feet in length of the middle of frontage is extended forward 8 feet 9 inches and in the middle of this the tower, 16 feet square, extends a further 6 feet, making the entire depth 54 feet 9 inches. Excepting 42 feet in length by 19 feet in depth of the middle of the rear, which is one story and basement, the projecting portion of the front which is three stories and basement and the tower which is five stories and basement, the building is two stories, basement and mansard attic.

The basement walls are stone, the upper walls brick with stone trimmings, the basement floor is of concrete and of that of the lavatory room and bath rooms of tiling, the basement partitions brick, but the floors, partitions, roofs and stairs in general are of wood.

The basement is for heating apparatus, fuel and stores; the ground floor. the post office, custom house and inland revenue offices, while the upper floors are to remain temporarily unfinished.

Heating is by hot water and lighting by electricity.
Plans, &c., prepared by this department.
Clerk of works, James Watson.
Contractors, Nagle & Mills.

ESSEX.

PUBLIC BUILDING.

On June 26, 1911, a contract was entered into for the construction of this building on a plot of ground situated on the S.W. corner of Gordon avenue and Fox street. It is a two story brick building on a stone basement with a four-story and basement tower on the right anterior angle, consisting of a main portion 45 feet by 42 feet and an adjunct in rear 26 feet by 27 feet. The basement is for heating, fuel and storage;

the ground floor of the main portion, the post office, stairway hall, vestibule and lavatory, and the adjunct the examining warehouse, weights and measures office and mail entrance; on the first floor, customs long room, collector's office, Inland Revenue office. 5 living rooms, 1 toilet room and one bath room.

The basement floor is of concrete, the basement partitions brick, and the floors of lavatory tile, but elsewhere the floors, partitions, stairs and roof are of wood.

Heating is by hot water; lighting by electricity, and drainage is to a septic tank on the site.

Plans, &c., prepared by this department.
Clerk of works, John Laing.
Contractor, Geo. A. Proctor.

ELORA.

PUBLIC BUILDING.

This building, which was described in my report of last year, is completed.
Plans, &c., prepared by this department.
Architect in charge, W. A. Mahony.
Contractors, Whelan and Bleakney.

FERGUS.

PUBLIC BUILDING.

This building, which was described in my report of last year, is completed.
Plans, &c., prepared by this department.
Architect in charge, W. A. Mahony.
Contractors, Whelan & Bleakney.

GALT.

PUBLIC BUILDING.

Some winter sashes were supplied to custom house, the woodwork, walls and ceilings of which were cleaned, papered and painted; the walls and ceilings of the post office cleaned and tinted, and the doors and fire-escape painted.

Work supervised by Thos. H. Hastings, Clerk of Works, Toronto, Ont.

GODERICH.

POST OFFICE—ADDITION.

The works referred to in my report of last year are completed; new fittings supplied post office, and the heating and lighting services extended to the new part.

Plans, &c., prepared by this office.
Contractors, Nagle & Mills.

GUELPH.

PUBLIC BUILDING.

The inland revenue offices and the caretaker's quarters were cleaned, tinted and painted, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

HARRISTON.

PUBLIC BUILDING.

This building, a contract for the construction of which was entered into March 31, 1911, consists of a main portion 43 feet by 39 feet, two stories brick with stone trimmings on a stone basement, and an adjunct of one story brick on a stone basement 21 feet by 23 feet 6 inches. The basement is for heating furnace, fuel, stores and hot-air pump; the ground floor of main building is the post office and of the adjunct, for a company armoury, while the first floor has an office, a C. O. room, 5 living rooms and a bath room. There is a lavatory room on the level of stair landing between ground and first floors.

The floor of the basement is concrete; of the bath room and lavatory, tile, and the partitions in basement are of brick; elsewhere the floors, partitions, stairs and roof are of wood.

The water supply is obtained by a power pump, from a well in yard. Drainage is to a septic tank on the site. Heating is by hot water, and lighting is by electricity.

Plans, &c., prepared by this department.

Resident architect, Geo. Gray.

Contractor, Geo. A. Proctor.

HAMILTON.

PUBLIC BUILDING.

The original heating furnaces, which were worn out, were removed and replaced by steel tubular boilers set in brickwork and furnished with new smoke stacks. Some alterations of and additions to mains and branches in basement were made, under the supervision of Wm. Mansfield, Inspector of Plumbing and Heating. For the post office a new stamping machine with motor. three trucks, 2 fire extinguishers, 1 dozen stools and 1 chair were supplied. For the customs were supplied a filing case, a screen, an iron canopy over entrance to express department; at warehouse, some linoleum and some recovering of furniture. The alleyway at east side of examining warehouse was paved.

Work supervised by Thos. H. Hastings, Clerk of Works, Toronto, Ont.

INGERSOLL.

PUBLIC BUILDING.

A grate was furnished and set in postmaster's office, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

KENORA.

PUBLIC BUILDING.

A duplicate key cabinet was supplied, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

LISTOWELL.

PUBLIC BUILDING.

On April 5, 1911, a contract was entered into for the construction of this building on the northwest corner of the intersection of Dodd and Main streets, with frontages of 87 feet and 54 feet respectively.

It is two stories of brick with stone trimmings on a stone basement, 48 feet of the frontage on Dodd street having a mansard attic and the remaining portion a mansard cockloft. In the left anterior angle is a 5-story tower, 13 feet square, on a stone basement. The flooring of basement is concrete; the partitions in basement brick, and the floors of bath and toilet rooms tile, but the remaining floors, partitions, as well as the roof and stairs, are of wood. The basement contains the furnace room, fuel room, storeroom, shooting gallery, brick vault and stairway hall; the ground floor the post office, the stairway hall, a brick vault, an armoury, an examining warehouse, a weights and measures office, a lavatory, a mail lobby and two vestibules; the first floor, the customs long room, the collector's office, a record room, an inland revenue office, a stairway hall, a military assembly room, an armoury, a C. O. room, a Q.M. room and a brick vault; in the attic are five living rooms, a bath room and a stairway hall.

Plans, etc., prepared by this department.
Resident architect, M. McGillivray.
Contractors, Whelan & Bleakney.

LINDSAY.

PUBLIC BUILDING.

The post office was supplied with new interior fittings under contract; the public lobby was cleaned, tinted and painted; there were supplied plate glass for counter of M.O. office, wall paper for caretaker's rooms and a wheel truck for railway station; a wash basin was removed, and some repairs made to roof. All under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

LONDON.

CUSTOM HOUSE.

The clock tower was repaired, the clock cleaned and new dials supplied, a room in caretaker's quarters was papered, some of the windows were reglazed, a room was painted and some furniture varnished, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

POST OFFICE.

A new window was inserted at side entrance, the vault door was overhauled, a new extension ladder was supplied, and the galvanized iron roof was repaired. All under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

MILITARY STORES BUILDING.

A one-story browning room 24 feet by 22 feet, continuous with ground floor, having walls of brick with stone dressings similar to those of the main building, floored with concrete, having a drying room 7 feet 6 inches, enclosed by a brick partition in one angle, and having a roof of wood covered with galvanized iron, was erected as an adjunct at the rear of the building. The water and lighting services were extended thereto and a browning bath, forge, sink, &c., were installed.

Work done under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

MITCHELL.

PUBLIC BUILDING.

On March 24, 1911, a contract was entered into for the construction of this building on a plot of ground bounded in front by Market square, on the right by St. Andrew street, and in rear by Quebec street, measuring 52 feet frontage by 42 feet in depth, and having two stories of brick with stone trimmings on a stone basement, a wooden mansard attic and a four-story tower on right anterior angle. The internal construction is mainly wood, but the basement floor is concrete, the basement partitions brick and the floor of the post office, public lobby, vestibule and toilet rooms are of tile. The basement contains furnace room, fuel room, two storage rooms and cellarage; the ground floor the post office, examining warehouse, lavatory and stair hall; the first floor customs long room, collector's office, armoury, C.O. room and lavatory, and the attic, 6 living rooms, bath rooms and stair hall.

Drainage is to a septic tank on the site.

Heating is by hot water and lighting by electricity.

Plans, &c., prepared by this department.

Clerk of works, Wm. Ryan.

Contractor, John Avery.

MOUNT FOREST.

PUBLIC BUILDING.

This building, a contract for the construction of which, on the corner of Main and Wellington streets, was entered into February 20, 1911, consists of a main portion 42 feet front by 45 feet deep, two stories of brick with stone trimmings and on a stone basement, and an adjunct 20 feet by 29 feet of one story on an unexcavated basement. There is a 4-story tower on a stone basement forming the right anterior angle of the building. Excepting the basement floor, which is of concrete, the basement partitions which are brick and the bath room and lavatory floors, which are tile, the floors, partitions, stairs and roofs are of wood. The basement has furnace room, fuel room, lavatory and stairway hall; the ground floor of the main portion, the post office and of the adjunct, an armoury, while the first floor has one office, one C.O. room, 5 living rooms and a bathroom. There is a toilet room in a mezzanine between ground and first floor opening on stairway landing.

The drainage is to a septic tank on the site; the heating is by hot water; and the lighting by electricity.

Plans, &c., prepared by this department.

Clerk of works, John H. Hunter.

Contractor, Geo. A. Proctor.

NAPANEE.

PUBLIC BUILDING.

Tile drains were laid along the outside wall, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

NIAGARA FALLS.

PUBLIC BUILDING.

New post office fittings and new wiring and lighting fittings were installed by contract; the caretaker's quarters were papered; a concrete driveway was laid between

examining warehouse and main building; a new lavatory and bath were installed in caretaker's quarters; the building was re-wired and had new lighting fixtures supplied.

The customs parcels office had a new partition and repairs to the hot-water system, while the immigration office was supplied with a table and a clock. All under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

ARMOURIES.

This building, which was described in my report of last year, is still in progress of construction.

Plans, &c., prepared by this department.
Clerk of works, George Searle.
Contractor, A. B. Robertson.

ORANGEVILLE.

PUBLIC BUILDING.

The building was wired and fixtured for electric light, and some additional minor fittings and furniture was supplied to the custom house, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

ORILLIA.

POST OFFICE.

A tile drain from building to town sewer was laid, 3 awnings were supplied and the furniture was repaired, all under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

OSHAWA.

PUBLIC BUILDING.

Footpaths and asphalt block pavement were laid in front of building; the interior walls, ceilings and woodwork were cleaned, painted, papered and varnished; linoleum was laid in long room and a rug supplied to the collector's office, and the plumbing was repaired. Work supervised by Thos. H. Hastings, Clerk of Works, Toronto, Ont.

OTTAWA.

ARCHIVES BUILDINGS—SUSSEX STREET.

There were supplied 14 awnings, 1 vacuum cleaner, 2 screens, 15 yards of Brussels carpet, 1 steel plate, 15 sections bookcase, 3 tops and 3 bases. Two rooms were tinted and painted, and minor repairs were made to joinery, glazing, plastering, &c.

Work executed by the departmental repair staff.
John Shearer, Superintendent.

BLACKBURN BUILDING—METCALFE STREET.

Offices are rented in this building for Interior Department, Post Office Department and Finance Department. To the Finance Department were supplied 4 cupboards for charwomen, 2 tables, 6 chairs and 3 desks; to the Post Office Department, 57 desks, 15 chairs, 12 filing cabinets, 2 chair cushions, 1 table, 23 window shades, 1 mirror, 1 mail box, 10 lamps, 2 shelves, and 4 clothes hooks on strips; to the Interior Deparment, 6 tiers of shelving in 2 vaults, one 4 drawer unit with 1 pair ends, one

4 tray unit, 1 legal unit, 3 leather cushions, 1 table, 3 chairs, 6 awnings, 1 cabinet, 1 hat rack, and 6 letter trays.

Work done by departmental staff.

John Shearer, Superintendent.

CENTRAL EXPERIMENTAL FARM.

On 22nd of August, 1911, a contract was entered into for the construction of the tobacco barn, a two-story wooden building, measuring 46 feet 7 inches by 31 feet 7 inches on a concrete foundation, a portion of which 16 feet by 21 feet is excavated for a furnace room, having a small adjunct underground 8 feet by 15 feet for a coal shed. The furnace room extends up through the ground floor upon which there are two other rooms with 3 over. The building is heated by steam and provided with recording thermometers, humidifier pans, hygrometers, &c.

General repairs to and alterations of the Directors residence were effected.

A booster pump was installed and an elevated tank 16 feet by 18 feet lined with copper, of 25,000 gallons capacity, was erected. 200 feet of 12 inch drain was laid. The cereal building was wired for lighting and had a motor, W.C., basins, sinks, &c., installed. The dairy building was wired and generally repaired. The telephone at the Director's house was re-wired, a desk telephone was installed for the Agriculturist as also buzzers for the Entomologist and Botanist.

Work done under the supervision of John Sharpe, Clerk of Works.

Contractor for tobacco barn, A. A. Matte.

CANADIAN BUILDING.

This is a rented building on Slater street.

There were supplied 54 book sections, 27 each to Agriculture and Interior Departments; 19 desks, 4 to Interior and 15 to Agriculture; stools, 13 to Interior; 79 chairs, 71 to Agriculture and 8 to Interior; 7 filters to Interior department; 25 tables, 17 to Agriculture and 8 to Interior; 3 stepladders, 2 to Agriculture and 1 to Interior; 3 cushions for Interior Department; 40 units, 2 pairs ends and 6 tops for the Interior; 4 cupboards, 3 for Interior and 1 for Agriculture; 2 rods and curtains for the Interior; 193 coat and hat hooks on strips, 160 for Agriculture and 36 for the Interior; 17 window shades, 8 for Agriculture and 9 for the Interior; 6 window deflectors, 4 for Agriculture and 2 for the Interior; 3 screens for Agriculture and 1 for the Interior; 11 locks, 10 for the Interior and 1 for the Agriculture and there were supplied for the Agriculture department 4 mirrors, 1 nail puller. 1 oak box, 1 swing gate, 4 flat rubber tires, 2 toilet sets, 1 fan blower, 1 seed germinator, 70 buck saws, 4 plan rollers, 4 doz. galvanized pans, 1 six inch metal wheel, 1 rod and curtain, 1 shelf, 1 truck, 1 door spring; and for the Interior Department, 97 shelves, 2 rugs, 20 feet of partition, 2 deflectors, 2 door springs, 1 door check, 1 window pole, 1 set fire irons, 2 drawers, 4 legal units, 2 pairs ends, 1 storage section, 1 index section, 1 base, 1 cooler stand, 2 drawers, 225 guides, and 2 squares hardwood floor. Two rooms were cleaned, tinted and painted for the Interior Department and a like number for the Agriculture. Of electric light fixtures there were supplied and installed 11 4-light clusters in the Interior and 12 in the Agriculture, of 3 light clusters 2 in the Interior, of drop lights 45 in the Interior and 3 in the Agriculture, of other varieties of lamp including desk lamps 73 in the Interior and 27 in the Agriculture; 66 adapters were supplied to the Interior and 12 to the Agriculture; 1 electric fan to the Interior and 6 to the Agriculture; 7 lamp shades to the Interior and 3 to the Agriculture; 2 telephones to the Interior and 4 to the Agriculture; 6 switches to the Interior and 2 to the Agriculture; 3 call bells to the Agriculture and 1 to the Interior, also to the Interior 11 lamp shades and holders, 12 sockets and 1 lead-lined sink in place with all fittings and connections. For the Naval Service,

1 cupboard, 5 sections, 1 top and 1 base were supplied. Changes were made in bell hanging, electric light and telephone wiring and in the position of lights. Repairs were made to heating, plumbing, joinery, glazing, furniture and fittings.

Work done by the departmental staff.

John Shearer, Superintendent.

CONSERVATION COMMISSION OFFICES.

These are rented offices in the Great Northwestern Telegraph building, corner of Metcalfe and Sparks streets. There were provided 2 4-light electroliers, 5 desk lamps, 1 call bell, 3 electric fans, 1 drop light, 76 file sections, 15 tops, 15 bases, 3 desks, 34 book sections, 3 bases, 3 tops, 1 base drawer, 5 chairs, 4 cabinets, 1 cupboard, 1 sliding shelf, 25 feet of cupboard, 2 mats and 7 signs. Electric bells and phones were moved and rewired, and the rooms were cleaned, tinted and painted.

Work done by this department.

John Shearer, Superintendent.

CUSTOM HOUSE.

This is a rented building at the corner of O'Connor and Sparks streets. A partition was built to divide lavatory, top flat, and a number of partitions, including 1 door, elsewhere, aggregating 74 feet; 65 lights of frosted glass were put in; a quantity of shelving was set up; usual and ordinary works of repair were done and some new lights wired for and furnished.

John Shearer, Superintendent.

EXAMINING WAREHOUSE.

This is a rented building, No. 10 Albert street. A water closet and three lavatory basins were fitted up on ground floor with all the necessary plumbing, the lavatory was repaired and the steam mains in part covered with asbestos sectional covering.

The ground floor and basement had electric lighting installed; a platform was erected on east side of building; the brickwork of the boiler was repaired; elevator door was enlarged; 10 feet of glazed partition with door, and 8 feet of plain partition were erected; a part of the plaster was renewed; the walls were tinted and the woodwork painted; the entire shelving was repaired; the W.C. room was enlarged and there were supplied 1 fireproof safe, 4 sets of double pigeon-holed racks, 1 table, 1 slat partition and 1 door sign.

Work done by the departmental staff.

John Shearer, Superintendent.

EASTERN BLOCK—ADDITION.

This work, which was described in my report of last year, has been continuously in progress and is expected to be completed before the close of the next fiscal year.

Plans prepared and work supervised by this department.

Contractors, Doran & Devlin.

EASTERN BLOCK.

There were 9 rooms cleaned, painted and tinted, including floor treatment of which 3 were in the Justice Department and one each in the Privy Council, Auditor General's, Secretary of State and Indian Affairs; 1 hardwood floor was laid for the Justice Department; 17 chairs supplied the Justice, 5 each for the Finance and Indian Affairs, 3 for the Auditor General and 2 each for the Secretary of State and



Magog, P.Q., post office.



Cookshire, P.Q., public building.



Hawkesbury, P.Q., public building.

the Privy Council; 6 desks for the Auditor General, and 3 each, for the Justice and Indian Affairs; 6 ventilators for the Justice, 2 for the Auditor General and 1 for the Indian Affairs; 9 tables for the Justice, 2 for the Finance and 1 each for the Inland Revenue and Auditor General; 8 book case sections, 2 tops and 2 bases for the Auditor General's, 6 sections, 1 top and 1 base for the Indian Affairs and 1 section for the Justice; 5 cupboards for the Justice and 3 for the Finance; 1 clock each for the Justice and Indian Affairs; 7 cabinets for the Auditor General and 1 for the Indian Affairs; 2 filters, coolers and stands for the Justice and 1 for the Secretary of State; 2 awnings for the Secretary of State and 1 for the Indian Affairs; 5 window shades for the Justice and 1 each, for the Auditor General's and Finance; 2 chair cushions for the Privy Council and 1 for the Secretary of State; 7 cabinets for the Auditor General's and 1 for Indian Affairs; 5 signs for the Justice and 1 for Indian Affairs; 4 mats for the Auditor General's, 3 for the Justice and 1 each for Secretary of State and Indian Affairs; 34 yards Brussels carpet for the Auditor General's, 84 yards Axminster for the Privy Council and 1 room carpet of Brussels for the Justice; 29 yards linoleum and 58 yards cork carpet for the Justice and 45 yards linoleum for the Indian Affairs; 8 chests for the Finance and 7 for the Justice; 17 locks for the Secretary of State, 7 for the Governor General's, 5 for the Justice and 3 for the Auditor General's, and of keys 33 for the Secretary of State, 23 for the Justice, and 16 for the Auditor General's. There were 3 floor rugs, 10 coat and hat hooks, 4 boxes, 1 telephone booth, 3 shelves, 3 fly screens, 500 feet of white pine, 300 feet of basswood, 3 towel bars, 1 cuspidor and 7 yards repp supplied for the Justice Department; 2 stools, 1 set fire irons, 1 cushioned seat and 8 lights of glass for the Indian Affairs; 1 fire basket, 9 wire guards, 1 typewriter stand, 1 new grate, 1 box and 2 finger plates for the Secretary of State; 1 desk slope, 1 mirror, 12 drawers, 2 shelves, 1 base and 1 step ladder for the Auditor General's; 1 door check and 1 glazed screen for the Privy Council, and 1 brass screen, 3 Royal Standards and 3 door checks for the Governor General's Department. Of 5 light Tungstoliers, 3 were supplied to the Finance and 1 for the Justice; of 4 light Tungstoliers, 4 were supplied for the Secretary of State and 1 each for the Indian Affairs and Finance; of 3 light Tungstoliers 2 were supplied for the Secretary of State, and a 5 light electrolier was supplied for the Secretary of State; 8 drop lights were wired for the Justice and 2 for the Finance; 7 shades each for the Indian Affairs and Justice and 1 for the Finance; 3 call bells for the Justice and 2 for the Finance; 16 lamps for the Justice and 5 for the Finance; 1 telephone each for the Finance, Secretary of State, Indian Affairs and Justice; 2 electric fans on brackets, each for the Justice and Finance, and 1 for Indian Affairs; 3 shade holders for the Justice, 1 wash basin for the Indian Affairs, 1 telephone booth; 50 extinguishers, 1 electric heater and 1 lead-lined sink for the Justice and 1 electric clock and 1 electric toaster for the Privy Council. Gas connections were made for the Finance Department, call bells were changed and rewired for all departments and lighting, heating and water services readjusted and added to. The incinerator of the Finance Department was repaired.

A number of chairs were re-upholstered and repairs were made to call bells, glazing, &c.

There were minor jobs such as lettering, painting, general repairs, &c. The double windows and summer blinds were taken off, stored, cleaned and put on periodically, and the roofs, footpaths and roads were kept free from snow during winter.

Work done under the supervision of this department.

John Shearer, Superintendent.

GOVERNMENT HOUSE.

A new cloak room addition was built by contract on the site of the chapel, which was demolished, forming a part of the main house. It is two stories of brick, con-

taining on ground floor, the entrance hall, two men's cloak rooms, and on first floor, two ladies' cloak rooms, all fitted with cloak cases, counters, seats, mirrors, lavatories and W.Cs., carpeted and lighted, and heated from the House service.

A double two-story brick cottage for servants' quarters containing seven rooms, bath and W.C. and fitted up with hot air heating, electric lighting, &c., was erected on the back road.

A two-story, fireproof, brick and cement concrete garage containing stalls for three cars, workshop, &c., on ground floor and apartments for drivers on first floor, with all necessary tanks, hot water heating, electric lighting, &c., was built by contract.

The laundry building was converted into two cottages for married servants, fitted up with baths, W.C's., ranges, &c., &c., and having sheds built adjoining.

The gardener's lodge was added to, repainted outside, painted and papered inside, had new hot air heating apparatus, sinks, baths, W.C., &c., and the soil pipe connected with sewer on McKay and Thomas streets.

The old riding-shed was demolished, as also the old guard room, the store room adjoining and the fuel shed at laundry.

Two additions were made to the harness room and one addition to the groom's dress room; the old harness rooms were refloored in concrete, a portion of the old harness room was divided off as a kitchen and fitted up with range, &c., &c., and a further portion as a bath room with proper baths, water service, &c.

There were laid 517 lineal feet of 3 inch wood sidewalk 3 feet 3 inches wide, 347 superficial yards of concrete sidewalk with platforms and steps to cottages, 223 superficial yards of concrete paving in concrete to replace block paving removed and general repairs to paving, sidewalks and crossings. Of new fencing, there were 78 feet (lineal) of 4 foot picket fence and a like number of feet of 8 foot dressed board fence, both painted; 275 feet (lineal) of strip fence was removed from foot of garden, 385 feet from road to cottage and 683 from vegetable field. Repairs were made to fences generally. Forty-two squares of shingling were renewed on stables and sheds.

At the house, an archway was opened in the partition between the Military Secretary's office and the Governor General's study converting the two rooms into a smoking room, which was repainted, repapered, tinted, carpeted and furnished. The floors and a part of the walls of four bath rooms and six W.C's. were laid in tiles, 1,204 square feet in all. The plumbing of the house was thoroughly examined by sanitary experts especially employed, and was pronounced by them to be good throughout. A bath room for the men servants was fitted up in the basement. The still room was furnished with a new range, a gas stove with grill combination, a refrigerator and 2 new tables. A new floor of hardwood laid on concrete was laid in the servants' hall. A passageway and staircase was built to give access to a new washup room which was built for the men servants.

Two small rooms were formed for storing wine and beer. Two new No. 8 hot water furnaces, two baths and 3 sinks were provided, fittted up and connected with the water and heating systems. On night of state ball a temporary sitting-out room was erected on lawn after which it was taken down and removed. An enclosed wooden porch on concrete foundation was erected at rear door. An extension was built from the woodshed with concrete floor, &c. In the ball room, 12 windows were fitted with new curtains, valances and hollands blind, the coils were bronzed, the ceilings and walls redecorated, the woodwork painted and new electric light brackets were substituted for the original, which were removed. New carpet was laid in A.D.C. office, Comptroller's office, tea room, H. R. H. boudoir, Miss Pelly's sitting room, new smoking room, oval room first floor, bedrooms Nos. 2 and 13, cook's sitting room, cook's bedroom, corridors, passages and stairways throughout and in men's rooms under tennis court. The carpets which the foregoing replaced were remade and laid in servant's rooms throughout the house and in the stablemen's rooms. About 5,320 yards of

carpet were recleaned. The main entrance hall was laid in linoleum. The rooms throughout were generally renovated, there being 4,423 sup. yards of cleaning walls and ceilings; 6,846 sup. yards tinting, 13,366 sup. yards painting, 416 sup. yards staining, 140 sup. yards of bronzing, 966 rolls of paper hung, 1,371 square feet of glazing done and 128 days of lettering, patching and odd painter's repairs. A large quantity of new furniture was provided for the principal rooms of the house, the old furniture of which was distributed among the servant's rooms and the married servant's quarters. All the buildings about the grounds including stables, dairy, workshop, curling rink and shelter, ice houses, store houses, &c., were painted. The ice houses were enlarged.

Nine bedsteads and mattresses were supplied to the grooms bedrooms and a number of same to rooms under tennis court, a new grill was added to range in kitchen, also two ice boxes, 2 tables and 2 shelves in plate heater in kitchen, a table top in larder and iron washstands to rooms under tennis court. New electroliers were fitted up in halls, passages, corridors, ground floor and in dining room. New curtains and valances in green silk hung in H. R. H. study boudoir, in yellow silk in the tea room and in red silk in the drawing room. A large number of articles of furniture was repaired, revarnished and reupholstered or had loose covers. A quantity of china, glassware and crockery was procured to replace articles broken during the year and a large quantity of kitchen and still room utensils to replace those worn out or broken, while a large proportion of the copper utensils were retinned. A large quantity of napery and blankets were supplied. Rideau Cottage was cleaned, tinted, papered and painted. A number of repairs were made and some china and glassware, kitchen utensils, coal scuttles and shovels were provided.

The fuel sheds were overhauled and floored in concrete, the greenhouses were repaired and hot bed frames and plant boxes made. Two concrete manholes to main water pipes were put in and 500 feet of 1 inch galvanized pipe with bibcocks for watering purposes were laid down.

The new terrace stairs and lawns commenced the previous year were completed.

Repairs and renewals were made to furniture, heating, plumbing, water and bell services, joinery, plastering and glazing.

The conservatories were kept in order, the hay was cut and housed, the lawns, drives, &c., rolled and otherwise tended. The ice-house was stored with ice. The roofs, paths, slides, rinks, &c., were cleared of snow by the departmental staff, by whom the grounds, lawns, gardens and plant-houses were maintained. The curling and skating rinks were flooded and tended and the toboggan slide was kept in order. The usual periodic cleaning, packing and unpacking, were done; arrangements for and attendance on entertainments were furnished, and the rinks, slides, &c., kept in order.

Work done under supervision of Wm. Hutchison, Superintendent.

CENTRAL RAILWAY STATION.

The upper flats of this building are leased for the use of the Railway Commission.

There were supplied to the Railway Commission, 271 chairs, 10 desks, 20 tables, 4 cupboards, 59 window blinds, 6 window poles, 3 wardrobes, 2 toilet cabinets, 2 mirrors, 2 leather cushions, 18 file cases, 4 book sections, 1 base, 1 top, 53 units, 7 bases, 7 tops, 8 sections, 1 base, 1 top, 1 book rack, 6 settees, 1 couch, 22 feet of partition, 36 feet of cupboard, 3 door checks, 4 electric fans, 3 sets pole ends, 3 grate baskets, 2 brass spark guards, 3 coal scuttles, 3 sets fire irons, 2 umbrella racks, 2 brass fenders, 1 brass rod and curtain, 5 pairs curtains, 9 mats, 2 Axminster rugs, 7 carpet rugs, 6 yards cork carpet, 6 keys, 4 blocks, 3 locks and, for the Finance Department, 4 cupboards for charwomen. There were also repairs to fittings and to 134 articles of furniture.

Work done by the departmental staff.

John Shearer, Superintendent.

GOVERNMENT WORKSHOPS BUILDING—QUEEN AND O'CONNOR STREETS.

There was supplied to the Public Works Department 1 cast iron sink; to the Trade and Commerce Department 7 ventilators, 1 door sign, 2 chairs, 1 desk, 1 sprinkling can and 6 3-light Tungstoilers; to the Auditor General's Department 20 blinds, 1 Brussels rug, 8 desks, 8 tables, 10 chairs, 1 cupboard, 1 pair of doors, 2 blowers, 2 signs, 1 brass rod and curtain, 2 cupboard sections, 8 storage sections, 1 roller section, 4 tops, 2 bases, 3 keys and 3 lights glazed.

Work done by the departmental staff.

John Shearer, Superintendent.

IMPERIAL BUILDING—QUEEN STREET.

This is a rented building. For the Surveyor General's branch of the Interior Department, the water service was extended, a motor was connected for photo-engraving and extensions from and additions to electric lighting, water service and plumbing were made. There were supplied 20 drop lights, 2 desk lamps, 1 bracket lamp, 6 shades, 4 filters, coolers and stands, 10 shelves, 1 desk, 2 tables, 2 chairs, 4 cushions, 1 blower, 1 coal scuttle, 1 grate screen, 1 door spring.

INLAND REVENUE LABORATORY—QUEEN STREET.

This is a rented building. Electric lighting was installed and there were supplied and fitted up: telephone, 23 awnings and 69 shades.

Work done by the departmental staff.

John Shearer, Superintendent.

LANGEVIN BLOCK.

The eastern battery of 4 hot water furnaces was taken out and replaced by 4 steel tubular furnaces similar to those put in the previous year at the west end of the building. The smoke pipe of the steam boilers was changed from rear to front and the incinerator in the sub-basement corridor was changed in position.

There were supplied 38 desks, 26 to the Interior, 6 to the Agriculture, and 6 to the Post Office; 234 chairs, 173 to the Post Office, 44 to the Interior, and 17 to the Agriculture; 57 tables, 33 to Post Office, 2 to Agriculture, and 22 to Interior; 27 stools, 18 to Interior, 4 to the Agriculture, and 5 to the Post Office; 53 rods and curtains to the Interior, and 1 to the Post Office; 2 book cases for the Interior and 2 for the Post Office; 36 cabinets, 22 for Post Office, 11 for Agriculture and 3 for Interior; 10 cushions for Interior, 4 for Post Office and 2 for Agriculture; 4 step ladders for Interior, 3 for Agriculture and 1 for Post Office; 4 ventilators for Interior and 2 for Post Office; 9 window shades for the Post Office and 8 for the Interior; 4 file sections, 2 bases and 3 tops for the Post Office, 4 sections for the Agriculture and 4 sections, 3 bases and 2 tops for the Interior; 64 book sections, 8 tops and 8 bases for the Agriculture, 29 sections, 8 tops and 7 bases for the Interior and 6 sections, 1 top and 1 base for the Post Office; 4 cupboards for the Interior and 1 for the Agriculture; 6 filters, coolers and stands were supplied the Interior and 3 the Post Office; 12 cupboard units and 1 pair of ends for Interior and 5 units, 2 tops and 2 bases for the Post Office; 4 cupboards for the Interior and 1 for the Agriculture; 72 hat hooks on strips for Post Office, 12 for Interior and 10 for Agriculture; 2 trucks for Interior and 2 for Agriculture; 170 yards Brussels and 198 yards corkine for Interior; 3 door springs for Post Office, 2 for Interior and 1 for Agriculture; 2 rugs for Agriculture and 1 each for Interior and Post Office; 2 book stands for Interior and 1 for Agriculture; 2 map racks for Interior and 1 for Agriculture. For the Interior were supplied 5 mats, 2 settees, 2 awnings, 2 wardrobes, 5 deflectors, 2 cloth-covered doors, 1 screen, 14 desk trays, 2 boxes, 7 counter doors, 1 umbrella stand, 1 coat tree, 110 feet lineal

of partition, 2 sets of shelving, 2 sliding shelves and 3 door pulls; to the Agriculture 1 hardwood floor, 3 card trays, 12 blocks and 1 granite pitcher; to the Post Office 1 wood seat, 41 soap dispensers, 42 pieces lumber, 1 blower fan, 15 tin trays, 84 rubber tips and 1 filter stand. There were 12 rooms cleaned, tinted and painted for the Interior, 18 for the Post Office and 5 for the Agriculture. 6 filters, coolers and stands were supplied the Interior. Locks, keys and ironmongery were supplied where necessary.

45 drop lights were installed in the Post Office Department, 11 in the Interior and 7 in the Agriculture; 15 electric fans each, in the Interior and Agriculture and 6 in the Post Office; 7 desk lamps in the Interior, 2 in the Post Office and 1 in the Agriculture; 30 shades in the Agriculture, 22 in the Post Office and 2 in the Interior; 15 adapters in the Agriculture, 8 in the Post Office and 3 in the Interior; 2 telephones each in the Interior and Post Office; 2 call bells in the Interior and 1 in the Post Office; 2 wash basins in the Interior and 1 in the Post Office; 1 five-light, 1 four-light and 1 two-light clusters in the Post Office; a system of call bells in the Interior; 16 Tungsten lights in the Agriculture, 8 in the Post Office and 3 in the Interior, and 3 switches; 17 shade holders, and 1 electric heater in the Post Office Department. A large amount of repairs was done to furniture, fittings, heatings, bells, lighting, water service, masonry, plumbing, joinery, &c.

Work done by the departmental staff.

John Shearer, Superintendent.

MILITIA INSPECTION ROOMS—113 RIDEAU STREET.

These offices are rented. Connections were made to the city water service; electric lighting, electric bell service, a wash basin, speaking tubes and telephone service were put in, and there were supplied 2 4-light Tungsten clusters, 3 awnings, 1 door, 1 pair hinges, 2 mirrors, 2 towel racks, and 1 water filter.

Work done by the departmental staff.

John Shearer, Superintendent.

MINES DEPARTMENT—THISTLE BUILDING, WELLINGTON STREET AND SLATER BLOCK. SPARKS STREET.

These are rented buildings. Repairs were made to plumbing and there were supplied 6 water filters and stands, 1 fan, 21 chairs, 1 60-drawer cabinet, 4 desks, 2 mirrors, 1 cupboard, 1 book case, 4 sections, 1 top, 1 base, 1 drop light, 4 desk lamps, 1 call bell, 26 yards linoleum, 3 steel drawers, 1 unit, 1 top and wire shades, &c., &c., for lighting, bells, heating, &c., &c.

Work done by the departmental staff.

John Shearer, Superintendent.

MAJOR HILL PARK.

Usual and ordinary repairs were effected and the grass and flower display well kept up.

Work done under the supervision of this department.

John Shearer, Superintendent.

Thomas Davis, gardener.

MILITIA BUILDING—WOODS BUILDING, SLATER STREET.

This is a rented building. The Minister's room was furnished with a ventilating apparatus; 44 lineal feet of partition were erected; 1 chimney cap was put on; 3 rooms were papered; 9 rooms were cleaned, tinted and painted, and had floors treated and there were furnished 9 ventilators, 46 chairs, 4 cupboards, 8 brass rods and cur-

tains, 24 tables, 26 desks, 14 window shades, 1 book shelf, 5 clocks, 28 book-sections, 8 bases and 5 tops, 3 mirrors, 1 letter box, 3 towel bars, 2 book racks, 1 filter, 3 toilet sets, 2 washstands, 1 typewriter stand, 12 leather chair cushions, 3 door springs, 10 signs, 2 doors and frames, 8 awnings, 5 sets window curtains, 42 yards linoleum, 14 yards green repp, 94 yards carpet, 10 yards green cloth, 2 rugs, 1 curtain, 4 floor mats, 12 saddle and harness racks, 1 scales stand, 1 4-wheel truck, 2 glazed partitions, 63 shelves, 1 set shelves, 41 hooks on strips, 20 locks, 39 keys, 2 guides, and 4,000 cards. A cupboard was extended and alteration of bells, heating, plumbing and lighting was done. The heating mains in part, were covered with asbestos covering; extensions from the bell and lighting services as well as a large number of new services were installed; 46 drop lights were installed as also 12 call bells, 1 door bell, 11 electric fans, 16 lamps, 1 buzzer, 1 water closet, 1 wash basin, 2 desk telephones, 9 desk lamps, 7 2-light Tungsten clusters, 1 4-light Tungsten cluster, 600 feet linen hose, 12 hose valves, 12 nozzles, besides adapters, shades, globes, switches, pushes, wire, &c., &c.

Work done by the departmental staff.

John Shearer, Superintendent.

NAVAL DEPARTMENT—HAWKESBURY BUILDING, SUSSEX STREET.

Of furniture and fittings there were supplied to this building 55 file sections, 14 bases, 21 tops, 14 cabinets, 11 desks, 22 chairs, 8 stools, 8 cupboard units, 7 step ladders, 4 cupboards, 1 typewriter stand, 1 letter box, 33 locks, 10 key rings, 44 key tags, 3 Quebec heaters, 25 screens, 1 filter, 1 door spring, 8 packing cases, 7 tables, 1 window shade, 1 blind, 366 feet lineal shelving, 34 feet cupboard, 36 shelves, 1 door, 12 door knobs, 1 drawer case, 1 key box, 19 box drawers, 66 signs, 1 board with hooks, 1 cushion, 2 sliding shelves, 6 ft. 6 inch. oak counter, 1 card index, 3 sets guides, 2 sets folders, 4,000 cards, 166 rolls of wall paper, 24 electric lamps, 6 drop lights, 7 lamps, 1 adapter and all the necessary fittings, wiring, &c., &c. Six rooms were cleaned, tinted and painted, and 27 yards of cork carpet were laid. Repairs were made to heating, furniture, lighting, and glazing and a pine floor was laid in vault.

Work done by the departmental staff.

John Shearer, Superintendent.

OBSERVATORY.

The lighting of this building was altered, occasioning the use of 150 feet of 4 inch. octagonal vitrified pipe; 10 dozen lamps, 13 desk lamps, 19 drop lights, and a large amount of wire, &c., coolers, filters, 2 chairs, 11 cushions were supplied.

Work carried on under the supervision of the department.

John Sharp, Clerk of Works.

PARLIAMENT BUILDINGS.

The water sterilizer system in the House of Commons was extended therefrom to the Senate.

Two doors and two windows were cut in stone wall; removable awnings were erected at entrances; the front row of seats in the Commons was re-upholstered; new chimney caps were provided; the outside woodwork was repainted and the inside woodwork repaired, painted, waxed and varnished. Eight rooms were cleaned, tinted, and had floors treated and there were supplied 1 vacuum cleaner, 4 cabinets, 7 desks, 2 tables, 80 chairs, 5 step ladders, 5 ventilators, 423 yards carpet, 28 yards cork carpet, 2 leather covered couches, 2 chests, 2 Axminster rugs, 2 cupboards, 12 sections, 1 top, 1 base, 4 dozen newspaper files, 2 newspaper stands, 2 upholstered seats, 5 doors, 3 rods and curtains, 5 window guards, one tarpaulin, 36 fly screens, 2 screen doors, 5 wash basins, 30 brass kickers, 1 indicator, 2 squares ceiling, 2 office stands, 5 poles, 2

chests, 2 fire screens, 1 set fire irons, 1 fender, 1 coal scuttle, 14 trucks, 3 doors and frames, 13 signs, 4 locks, 15 keys, 2 sinks, 1 gas baker, 7 electric fans, 14 desk lamps, 1 call bell, 3 brackets, 3 switches, 2 heating coils, 2 radiators, 23 drop lights, 1 5-light fixture, 12 3-light fixtures, 11 shades, 4 adapters, 29 lights, 1 sterilizing drinking fountain and 450 numbered tin plates. A number of rooms were rewired for bells and electric light and there were alterations to a number of others.

There were minor jobs of lettering, painting, &c., a large quantity of reglazing, general repairs, &c. The double windows and summer blinds were taken off, stored, cleaned and put on periodically, and the roofs, footpaths and roads kept free from snow during winter.

Work done under the supervision of this department.

John Shearer, Superintendent.

REGAL BUILDING—CORNER QUEEN AND METCALFE STREETS.

This is a rented building for the Labour Department. Electric lighting was installed in basement; some of the steam risers were covered. 1 room was papered and there were supplied 11 chairs, 8 tables, 5 desks, 5 cabinets, 6 window deflectors, 4 trays, 4 book sections, 1 top, 1 base, 1 book truck, 1 typewriter stand, 6 packing boxes, 1 mirror, 2 hat and coat racks, 2 vertical cases, 1 cupboard section, 12 brackets, 1 sign, 4 cuspidors, and 35 feet shelving; for the Finance Department, 1 water cooler, filter and stand, 6 chairs and 12 lamps; and for the Militia, 1 safe, 11 keys, 1 chair, 1 desk, 3 tables, 1 desk telephone, 8 3-light electroliers, 8 drop lights, 3 desk lamps, 6 shades and the necessary fittings and wiring.

Work done under the supervision of this department.

John Shearer, Superintendent.

GROUNDS—PARLIAMENT HILL.

Four valve chambers were built and a large quantity of rock excavation, pipe laying and earth filling in connection with new hydrants. The asphalt walks were patched and 977 feet, lineal, of asphalt finished roadway on north and west sides of West Block were laid.

The spring display of bulbs (49,000) made a good showing; the summer flower beds were well kept up and the greenhouse display excellent.

Work done by the departmental staff.

John Shearer, Superintendent.

PRINTING BUREAU.

Eight rooms, &c., were cleaned, tinted and painted, and had floors treated; 2 additional cloak rooms were formed; the fire escapes were altered; the roof was repaired and there were supplied 17 chairs, 9 desks, 16 tables, 11 chair cushions, 15 awnings, 2 ventilators, 32 stools, 288 feet lineal of partition, 1 settee, 12 file sections, 3 bases, 3 tops, 61 hat and coat hooks on slips, 86 yards cork carpet, 10 yards linoleum, 3 steam radiators, 1 water closet, 2 desk lamps, 5 Tungsten lamps, 8 dozen hooks, 87 lights of glazing, 12 sets of casters, 48 pulls, 48 keys, 27 locks, 100 feet cherry lumber, 100 feet oak, 1,100 feet basswood, 1 window sash, 3 pairs hinges and quantity of material for steam heating, electric lighting, as well as labour on installation.

Work supervised by this department.

John Shearer, Superintendent.

REPAIRING STREETS, ETC.

Scraping, cleaning and general repairs were done to the various roadways, foot paths and streets, under the control of the department. Rubbish, scrapings and ashes

were removed from Wellington street, Laurier bridge, East Block, West Block, Langevin Block, Parliament Building, workshops, Post Office, Printing Bureau, Museum, Archives building, Military Store building, the Mint, the numerous rented buildings, and the various streets, and deposited at Clarkstown dump; the grass at Printing Bureau, about Cartier Square, Royal Mint, Wellington street, two bridges, Survey office, Fisheries Museum, Archives building, was kept clipped, manure was drawn on and removed therefrom, and the ashes removed from the boiler-houses and furnace rooms of the various buildings; the roadways, sidewalks, footpaths, roofs and yards were kept clean of snow; drains were cut in snow and ice about building and along footpaths, and the footpaths sanded during the winter.

Work done by the departmental staff.

John Shearer, Superintendent.

TESTING LABORATORY—CLIFF STREET PROPERTY.

The building described in last year's report is completed. The wiring for testing, lighting, &c., was done by the departmental staff.

Plans prepared and work supervised by the department.

Contractor, Aug. Boehmer.

ROSENTHAL BUILDING—SPARKS STREET.

This is a rented building. Offices for Marine Department, Interior Department and Public Works Department officials are in the upper flats. There were supplied 9 chairs to the Marine Department and one to the Interior Department; 9 tables to the Marine and one each to Public Works and Interior; 4 cupboards to the Public Works and one to the Marine; one book case, each, to the Marine and Interior; 12 hat and coat hooks on strips, to the Marine, and 42 to the Interior; 2 brass rods and curtains to the Marine and one to the Interior and, to the Marine 53 file cupboard and pigeon-hole sections, 16 bases, 16 tops, 1 file case, 10 book sections, 2 tops, 2 bases, 11 desks, 4 cabinets, 1 clock, 1 stool, 5 units, 1 pair of ends, 17 shelves, 3 doors, 23 window shades, 2 couches, 2 wardrobes, 2 Axminster rugs, 1 mat, 72 yards carpet, 27 drawers, 25 feet of partition and one lock, 6 awnings were furnished for the Department of the Interior.

Wrok done and supervised by this department.

John Shearer, Superintendent.

ROYAL MINT—REFINERY BUILDING.

A number of new radiators and some additional piping were fitted up, and a quantity of glazing was renewed, by the departmental staff.

John Shearer, Superintendent.

ROYAL MINT.

Several new radiators were added to the hot water heating system; the floor and ceiling of the melting house and 3 other rooms were in part renewed; a lavatory was tiled; 150 feet of granolithic path was laid; a large amount of cutting in walls and ceilings for ventilation was done; the guard room was cleaned and painted; a drive was laid in front of refinery; 10 rooms were cleaned, tinted, painted and had floors treated; a cone rotary vault, a soap tank and a special bin were built and there were supplied and installed 2 fume hoods, 1 glazed partition, 7 ventilators, 4 awnings, 1 iron ladder, 3 window shades, 3 blinds, 2 cupboards, 1 truck, 1 tray, 10 sash operators, 1 shelf, 144 yards linoleum and a quantity of glazing.

Work done under the supervision of this department.

John Shearer, Superintendent.

POPHAM AND JARMAN BUILDING—QUEEN STREET.

These are rented premises. The attic wiring was altered and added to.
Work done by the departmental staff.
John Shearer, Superintendent.

POST OFFICE.

The general delivery bunk was wired and supplied with lamps; a water service from basement to the fourth floor driven by an electric pump was put in; the money order office was wired for additional lights and the gas service was repaired. There were supplied 10 chairs, 4 ventilators, 3 chair cushions, one filter and cooler, 2 mail trucks, 1 porch door, 4 stools, 2 screens, 1 cupboard 1 wash basin, 12 keys, 5 pieces scantlings, 2 maple boards and 60 clothes hooks on strips. A number of floors were treated, the elevator, furniture and glazing were repaired and alterations of fittings and tables were effected.

Work done under the supervision of the Department.
John Shearer, Superintendent.

SUPREME COURT.

There were supplied to the Supreme Court, 8 awnings, 1 sectional book case, 1 step ladder, 1 chair, 1 cushion, 6 pans, 1 cooler, 17 lights of glass and some galvanized iron pipe; to the Exchequer Court, 1 sectional book case, 1 rod and curtain, 1 table, 1 desk, 5 chairs, 1 sofa, 1 rug, 2 fly screens, and 4 green cloth covered doors. One room was cleaned, tinted and painted, and a number of articles of furniture repaired.

TRAFALGAR BUILDING—CORNER BANK AND QUEEN STREETS.

Offices are rented in this building for the Accountant's Branch of the Interior Department, the Civil Service Commission, External Affairs and the Annuities Branch of the Post Office Department. For the Civil Service Commission were supplied 3 desks, 19 sections of files, 1 base, 1 top, 17 cabinets, 12 chairs, 6 signs, 1 window shade and 39 feet of pigeon-holes; for the Post Office Department, 10 chairs and 2 desks were supplied; for the Interior, 1 clock, 2 chairs, 2 awnings and 30 Tungsten lamps; for the Secretary of State, 1 desk, 1 chair, 2 mats, 1 filter, 1 step-ladder, 1 book case, 7 sections, 1 top, 1 leg, 1 base and 1 jug and basin; and for the External Affairs, 2 telephones.

Repairs were made to desks, tables, chairs, doors, windows, &c.
Work done under the supervision of this department.
John Shearer, Superintendent.

VICTORIA MUSEUM.

The building is in process of fitting up with cases, &c., for the Geological, Zoological, Mineral and art collections. The Art Gallery has been painted and arranged to suit the art collections and furniture and fittings are being supplied to the various offices. The cleaning of the debris from the building operations was commenced in August, 1911, and carried on continuously since. A permanent concrete roadway surrounding the building was laid as also a permanent concrete footpath on 3 streets which form a part of the boundaries of grounds.

The lawns are in process of formation.
Work done by the departmental staff.
John Shearer, Superintendent.

WESTERN BLOCK.

There were supplied 19 tables to the Department of Marine and Fisheries, 11 to the Department of Inland Revenue, 12 to the Department of Customs, 6 to the Department of Public Works and 5 to the Department of Railways and Canals; 22 desks to the Public Works, 31 to the Customs, 9 to the Railways and Canals, 4 to the Trade and Commerce, 16 to the Marine and Fisheries and 4 to the Inland Revenue; 31 chairs to the Marine and Fisheries, 39 to the Customs, 25 to the Public Works, 14 to the Railways and Canals, 9 to the Inland Revenue and 2 each to the Mounted Police and Trade and Commerce; 9 cupboards to the Public Works, 1 to the Railways and Canals, and 2 each to the Inland Revenue, Marine and Fisheries, and Customs; 15 cabinets to the Public Works, 17 to the Marine and Fisheries, and 10 to the Railways and Canals; 43 window shades to the Railways and Canals, 35 to the Marine and Fisheries, 11 to the Public Works, 5 to the Customs, and 1 to the Trade and Commerce; 3 bookcases to the Marine and Fisheries, 2 to the Customs and 1 each to the Inland Revenue and Public Works; 2 filters and stands each to the Railways and Canals, Public Works and Marine and Fisheries; 7 ventilators to the Customs, 3 to the Public Works and 1 each to the Inland Revenue and Marine and Fisheries; 1 rod and curtain each, to the Public Works, Trade and Commerce, Customs, Inland Revenue and Marine and Fisheries; 5 step ladders to the Customs and 1 each to the Inland Revenue and Public Works; 7 awnings to the Trade and Commerce, 5 to the Marine and Fisheries, 2 to the Public Works and 1 to the Inland Revenue; 6 screens to the Public Works and 1 each to the Inland Revenue and Railways and Canals; 6 deflectors to the Public Works and 1 to the Marine and Fisheries; 31 bookcase sections, and 1 base to the Customs and 4 tops to the Marine and Fisheries, and 4 sections and 1 top to the Public Works; 27 file sections, 5 bases and 10 tops to the Marine and Fisheries, 8 sections, 7 bases and 3 tops to the Public Works and 5 sections, 1 base and 2 tops to the Railways and Canals; 2 cloth covered doors each to Trade and Commerce and Railways and Canals, and 1 each to Marine and Fisheries, Inland Revenue and Public Works; 7 blinds each, to Inland Revenue and Public Works, and 1 each, to Trade and Commerce, Inland Revenue and Marine and Fisheries; 5 chair cushions to the Marine and Fisheries and 2 each, to Railways and Canals and Public Works; 20 stools to the Public Works, 12 to the Customs and 1 to Inland Revenue; 19 doors to the Customs and 4 to the Public Works; carpet, 72 yards to Marine and Fisheries, 65 yards to Trade and Commerce, 33 yards to Public Works and carpet for 2 rooms to Customs; 3 Axminster rugs to Railways and Canals and 2 to Public Works; 2 Brussels rugs and some strips to Railways and Canals; 47 yards linoleum to Railways and Canals and 40 yards as also 49 yards oilcloth to Customs; 9 door springs to Marine and Fisheries, 2 to Public Works and 1 each to Railways and Canals, Trade and Commerce, Customs and Inland Revenue; 133 boxes to Public Works, 200 to Customs, 15 to Railways and Canals, 12 to Trade and Commerce and 1 to Marine and Fisheries; 1 clock each to the Public Works and Marine and Fisheries; 6 coat hooks on strips each, to the Public Works and Railways and Canals, and 12 to the Marine and Fisheries; 264 feet partition to the Public Works, 30 feet to the Railways and Canals, 35 feet to the Customs and 20 feet to the Marine and Fisheries; 70 feet shelving to Marine and Fisheries, 90 feet to Public Works as also 1 set shelving and 8 shelves; 4 squares hardwood flooring to the Public Works and 6 squares to the Railways and Canals; 4 sashes to Public Works, and 2 to Customs; 15 locks to Marine and Fisheries, 6 to the Trade and Commerce, 5 to the Public Works, 4 to the Customs and 2 to the Railways and Canals; 30 keys to the Public Works, 27 to the Marine and Fisheries, 12 to the Trade and Commerce, and 6 each, to the Railways and Canals and Customs; 102 signs written for the Customs, 8 for Railways and Canals, and 7 for the Public Works; 2 safes to the Inland Revenue and 1 to the Customs; 1 toilet cabinet each, to the Inland Revenue and Marine and Fish-

eries; 11 electric fans to the Marine and Fisheries, 12 to the Public Works and 2 to the Trade and Commerce; 1 foot rug each, to the Mounted Police and Inland Revenue; 2 mats for Public Works and 1 for Railways and Canals; 2 file trays to the Railways and Canals and 1 to Marine and Fisheries; 6 5-light Tungsten clusters to the Customs, 3 for the Marine and Fisheries and 1 to the Public Works; 4 4-light Tungsten clusters to the Public Works and 1 each, to the Marine and Fisheries, Trade and Commerce and Railways and Canals; 56 drop lights to the Marine and Fisheries, 6 each, to the Customs and Public Works and 5 to the Railways and Canals; 37 lights to the Public Works, 28 to the Customs and 48 to the Marine and Fisheries; 3 wash basins to the Marine and Fisheries and 1 to the Customs; 6 desk lamps to the Public Works and 1 to the Marine and Fisheries; 2 radiators each, to the Customs and Marine and Fisheries; 8 call bells to the Marine and Fisheries, 5 to the Public Works, and 1 to the Railways and Canals; 7 three-light Tungsten clusters to the Trade and Commerce, 3 to the Railways and Canals and 1 each, to Marine and Fisheries, Customs and Public Works; 28 adapters to the Customs, 10 to the Marine and Fisheries, and 9 to the Public Works; 2 buzzers to the Marine and Fisheries and 1 to the Customs; 3 telephones to the Marine and Fisheries and 5 to the Public Works; 164 lights of glass to the Public Works, and 18 to the Railways and Canals. There were of rooms cleaned, tinted, painted and floors treated, 5 for the Inland Revenue, 3 for the Marine and Fisheries, 2 for the Trade and Commerce, 9 for the Public Works, and 1 each for Railways and Canals and Trade and Commerce, besides 1 room papered for the Public Works. There were supplied to the Public Works Department 1 counter, 1 castiron sink, 2 picture frames, 12 shades, 15 letter boxes, 6 iron hooks and eyes, 6 towel rollers, 7 foot rests, 72 rolls of wall and ceiling paper, 3 dust covers, 1 coat tree, 1 tongs, 1 letter press, 2 blowers, 21 yards madras, 4 door stops, 600 feet photo glass, 1 steam pump, 1 dozen corduroy coats, and 1 water pitcher; to the Railways and Canals, 1 window pole, 1 set fire irons, 1 index holder, 2 fire guards, 4 lamps, and 1 set of Deveau telephones; to the Marine and Fisheries, 4 mirrors, 1 map rack, 4 dozen key rings, 4 globe valves, 8 shades, 4 cupboard doors, 1 chart frame, 1 furnace grate, 5 lengths pipe, 60 feet picture moulding, 1 pair glazed doors, 1 stand for model, 1 heating coil, 1,200 folders, 200 guides and 12 lights of glass; to the Customs, racks for messengers, shelving for 2 rooms, 7½ squares metal ceiling, 1 parcel rack, 12 book-racks, 6 newspaper files, 500 feet lumber, 17 sets pigeon-holes, 1 bunsen burner, 1 gas bracket, and 1 electric light bracket; to the Inland Revenue, 1 cooler stand and 1 truck; to the Trade and Commerce, 5 wall brackets and 2 stands; to the Inland Revenue, 1 electric heater, 1 steam radiator, and 1 electric fan.

A number of bell services and of electric light installations were put in each department, telephones were connected and disconnected and alterations of and additions to plumbing and heating.

There were also repairs to a large number of articles of furniture, as also minor jobs in painting, lettering and of joinery. The roofs, roads and footpaths were kept free from snow. The winter sashes and summer blinds were cleaned, put on, taken off, and stored periodically.

Work done under the supervision of the department.

John Shearer, Superintendent.

BUILDINGS AND GROUNDS GENERALLY.

In addition to the works mentioned in the foregoing, there are innumerable smaller works, *i.e.*, there are items of repair done by the roofers, masons, plumbers, and other trades, items taking each a number of day's work of a tradesman, besides material to accomplish. Besides all these in connection with the various buildings, the property of the government, there are similar works of repair, painting, papering, furnishing, tinting, &c., in connection with the numerous rented buildings; also such

works as repairs to and renewals of coal and other sheds, as well as works of a general character, such as the erection and taking down and storing of porches, winter boarding of outside steps, &c., all of which are done by the departmental staff.

John Shearer, Superintendent.

OWEN SOUND.

PUBLIC BUILDING.

The post office fittings were altered and added to; a railway truck and 10 wire stools were supplied, and some additional lighting in post office were installed.

PARIS.

PUBLIC BUILDING.

Two desks, three chairs and two stools were supplied, under the supervision of Thos. H. Hastings, Clerk of Works.

PARKHILL.

PUBLIC BUILDING.

A clock, 12 awnings for windows, 1 wardrobe and 2 chairs were supplied, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

PETERBOROUGH.

CUSTOM HOUSE.

A new closet and bath were fitted up in the caretaker's quarters where some painting was done as well as to the fire escapes. All under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

POST OFFICE ADDITION.

This work, which was described in my report of last year, is completed, the hot water heating and the electric lighting systems were extended to the addition.

PETROLEA.

PUBLIC BUILDING.

Natural gas was installed for the heating apparatus and some painting and papering was done in caretaker's quarters, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

PORT PERRY.

PUBLIC BUILDING.

This building, for the construction of which a contract was entered into November 29, 1911, is to be erected on the south side of Queen street and to consist of a main 2-story portion, 38 feet by 38 feet, resting on a stone basement, surmounted by a wooden mansard attic and included within it a 4-story brick tower on a stone basement situated on the left anterior angle; in the rear, a one story brick adjunct 27 feet by 35 feet on an unexcavated basement. Excepting that the basement floor and the ground floor vestibule are of concrete, the basement partitions of brick and the toilet room floor of tile, the floors, partitions, roofs and stairs are to be of wood. The basement is to be for heating apparatus, fuel, stores, hot air pump, pneumatic

tank and stairway; the ground floor of the main portion is to be post office, and of the adjunct for an armoury; the first floor, five offices for inland revenue officials, &c., and the attic for the caretaker's apartments. The drainage is to be to a septic tank in yard; the water service from a well in yard by a hot air pump and pneumatic tank; heating by hot water and lighting by electricity.

Plans, &c., prepared by this department.

Clerk of works, W. L. Parrish.

Contractor, W. J. Trick.

SANDWICH.

PUBLIC BUILDING.

Some minor general repairs were effected, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

SARNIA.

PUBLIC BUILDING.

Screens were erected in the postmaster's office, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

SAULT STE. MARIE.

PUBLIC BUILDING.

The caretaker's rooms and halls were cleaned and tinted, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

ST. CATHARINES.

PUBLIC BUILDING.

Minor repairs to plumbing were made, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

ST. MARYS.

PUBLIC BUILDING.

A fire-escape was erected, the stone steps were redressed, the drain was repaired, a handrail from bottom of stairs to caretaker's apartments was put in, and there were supplied: linoleum, 1 pigeon-hole case, 1 table, 1 chair and 1 lamp, all under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

ST. THOMAS.

PUBLIC BUILDING.

Minor repairs to windows and joinery were made, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

SEAFORTH.

PUBLIC BUILDING.

On July 4, 1911, a contract was entered into for the construction of this building, on the east side of Main street, consisting of a two story main portion 55 feet front

by 38 feet deep, of brick with stone trimmings, on a stone basement, surmounted by a wooden mansard having a 5-story brick tower 13 feet square on a stone foundation projecting 10 feet from the middle of the front, and a rear wing 47 feet by 30 feet, 2 stories of brick, with same trimmings on a stone foundation and surmounted by a flat roof. Excepting the basement floor and partitions which are concrete and brick respectively and the lavatory floors which are tile, the floors and partitions as well as the stairs and roof are of wood. The basement contains the heating apparatus, fuel and stores; the ground floor, the post office, examining warehouse, weights and measures office, mail lobby and toilet room; the first floor the customs and inland revenue offices, an infantry armoury, a C.O. office, 2 toilet rooms and a brick vault; in the attic are the caretaker's apartments.

The drainage is to a septic tank in yard; the water supply by a hot air pump from a well in yard; the heating by hot water and the lighting by electricity.

Plans, &c., prepared by this department.

Clerk of Works, Richard Wright.

Contractor, Thomas McKenzie.

SIMCOE.

PUBLIC BUILDING.

Some changes were made in lights, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

STRATFORD.

PUBLIC BUILDING.

A new hot water heating furnace was installed; a pent house was built over hatch in roof and the galvanized iron roof covering painted; a steel railing was set on roof; the front doors were cleaned and varnished; a birch top for desk was supplied, and a clock repaired. All under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

TILBURY.

PUBLIC BUILDING.

On September 11, 1911, a contract was entered into for the construction of this building on the corner of Queen and Canal streets. It is a 2-story brick building with stone trimmings, a stone basement and a 4-story tower on the street corner, consisting of a main building 42 feet square and a rear wing 26 feet by 27 feet. Excepting the basement floor, which is concrete, the lavatory and bathroom floors, which are of tile, and the basement partitions, which are brick, the floors and partitions, as also the stairs and roof, are of wood. The basement contains the furnace room, fuel room, and storerooms; the ground floor, the post office, stairway hall, vestibule and lavatory, in the main portion and the mail lobby, examining warehouse and weights and measures office in the adjunct; the first floor, customs long room, collector's office, inland revenue office, 5 living rooms, a toilet room and a bath room.

Drainage is to a septic tank on the site; heating is by hot water, and lighting is by electricity.

Plans, &c., prepared by this department.

Clerk of Works, Asa Lang.

Contractors, J. H. Pigott & Sons,

TILLSONBURG.

PUBLIC BUILDING.

On March 28, 1911, a contract was entered into for the erection of this building on the corner of Broadway and Ridout streets, consisting of a main portion 60 feet frontage on Ridout street, by 40 feet in depth on Broadway, two stories of brick with stone trimmings on a concrete stonefaced basement and surmounted by a wooden mansard attic, and a one-story brick adjunct on a stone basement, having a frontage of 25 feet on Ridout by a depth of 35 feet; on the street corner, and with a 3-feet projection from the building, is a 4-story tower. The basement floor is concrete, the floor of the public lobby and of the lavatory room tile, and the basement partitions brick, elsewhere the floors and partitions as also the roof and stairs are wood. The basement contains furnace room, fuel room, concrete vault and storage room; the ground floor, the post office, a brick vault, a stairway hall and two vestibules in the main portion, and in the adjunct the examining warehouse, weights and measures office, lavatory and passage; the first floor the customs long room, four offices, a brick vault, a lavatory and a stairway hall, and the attic, 6 living rooms, a storeroom, a bath room, a stairway hall and a corridor.

Heating is by hot water, and lighting by electricity.

Plans, &c., prepared by this department.

Resident architect, W. H. Jackson.

Contractor, Schultz Bros. & Co.

TORONTO.

POST OFFICE.

The new addition was fitted and furnished with special fittings, &c., per contract. A large quantity of new fittings were put in the original building and there were supplied 120 stools, a safe, a water sterilizing system, a clock, a motor for stamping machine, 2 desks and a chair. The travel of the passenger elevator was extended; 2 air line carriers were installed; lavatory basins were removed from old lavatory to new lunch room, and extensive additions were made to heating, plumbing, wiring and stamping machines.

Work supervised by Thos. H. Hastings, Clerk of Works, Toronto, Ont.

CUSTOM HOUSE.

There were supplied 2 desk stools, 1 ventilator and 1 indexed cabinet, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

UNION STATION, POSTAL STATION "A" AND IMMIGRATION STATION.

These are rented offices. Six trucks and one ash case were supplied, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

POSTAL STATION "B" 121 KING STREET WEST.

This is a rented building. New interior fittings were supplied and erected under contract. There were supplied a filing cabinet, some linoleum and some block gold letters, all under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

POSTAL STATION "C."

The entrance was repaired and a new tile floor laid, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

TORONTO—(*Con.*).

POSTAL STATION "D" WEST TORONTO.

The walls and ceilings of customs department and the iron fence of post office were painted and there were supplied, for the collector of customs, one desk and filter and one stool, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

POSTAL STATION "E."

This is a rented building on Bloor and Markham streets. Alterations were made and a stair and partitions removed, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

GARAGE FOR POST OFFICE DEPARTMENT.

66 Bond street, Toronto.

This is a rented building. A gasoline tank was installed, plumbing and drainage necessary for lavatory and pit were done and some fire extinguishers were supplied, all under the supervision of Thos. H. Hastings, Toronto, Ont.

TRENTON.

PUBLIC BUILDING.

Concrete footpaths along street line were done, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

UXBRIDGE.

PUBLIC BUILDING.

On December 28, 1911, a contract was entered into for the construction of this building, having a frontage of 42 feet on Maple street by a depth of 74 feet on Spruce street, two stories of brick with stone dressings on a stone basement and consisting of a main portion 42 feet frontage by 45 feet depth and rear wing 23 feet broad by 29 feet deep. The basement floor is of concrete, the floor of the toilet rooms, bath rooms and post office public lobby are tiled, but the remaining floors and partitions as also the stairs and roof are of wood.

There is a shooting gallery in basement 9 feet in width extending along the entire right side of the main building and outside in rear 33 feet, in all a length of 78 feet, the remainder of main basement being for militia stores, that of the wing being for furnace room, fuel room and pump room. There is a well from which water is drawn by a hot air pump; the ground floor main building, contains post office, stairway hall, toilet room and mail entrance, that of wing for Inland Revenue office, C.O. office, lavatory, mail lobby and side entrance hall and stairway; the first floor main building, Inland Revenue office, women's toilet, 5 living rooms and a bath room, that of wing, an armoury, a recreation room and a staircase hall. The drainage is to a septic tank in yard. Heating is by hot water, and lighting by electricity.

Plans, &c., prepared by this department.
Clerk of Works, John Park.
Contractor, David Meyer.

WALKERTON.

PUBLIC BUILDING.

The boundary fence was rebuilt and painted and some floor oil supplied, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.



Cranbrook, B.C., public building.



Guysborough, N.S., public building.

WATERLOO.

PUBLIC BUILDING AND ARMOURY.

This building, a description of which was given in my last year's report, is still in progress.

Plans, &c., prepared by this department.

Contractor, L. B. Lachance.

Clerk of Works, Charles Moogk.

WINDSOR.

PUBLIC BUILDING.

A revolving public entrance door was put in, a maple floor was laid in postmaster's office, a plate glass counter in money order office; weather strips were furnished, some electric lights wired for and minor painting and reglazing effected. All under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

WOODSTOCK.

PUBLIC BUILDING.

The tile flooring was repaired, a cupboard built for caretaker's quarters, a parcel drop and brass plate put in, under the supervision of Thos. H. Hastings, Clerk of Works, Toronto, Ont.

PROVINCE OF MANITOBA.

BRANDON.

PUBLIC BUILDING.

A new toilet room was formed and fitted up with closet basins, wash basins, &c., extensive repairs were made to the roof and down pipes, and minor repairs to plaster, under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

LAND OFFICE.

Furniture, linoleum and electric lights were supplied for the Brandon Forestry department, under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

IMMIGRATION HALL.

The furnace was repaired under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

DAUPHIN.

PUBLIC BUILDING.

The fence was rebuilt, 3 window awnings were supplied and a counter was built in customs office, all under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

PORTAGE LA PRAIRIE.

PUBLIC BUILDING.

Cleaning, tinting and painting were done, under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

PORTAGE LA PRAIRIE—(*Con.*).

NEW PUBLIC BUILDING.

On June 5, 1911, a contract was entered into for the construction of this building on Gaddy street. It is a two-story brick building with cut stone cornice, stone string courses and trimmings and on a stone basement, having a frontage of 57 feet by a depth of 62 feet, exclusive of the projection of 5 feet in front for vestibule and of 16 feet in rear for rear end of shooting gallery which is 78 feet in length, extending along the entire right wall of basement and out under yard in rear. The basement contains the heating furnace, men's hall, men's lavatory, storage and stairway; the ground floor, the recreation room, cavalry harness room, cavalry armoury, two infantry armouries, three C.O. rooms, the stairway hall and the vestibule; the first floor, three offices for Department of Indian Affairs, and office for forestry inspector, four living rooms, a bathroom, and a ladies' lavatory. The basement floor is of concrete, the bath and lavatory floors are of tile and the basement partitions are brick, but the remaining floors and partitions, as also the stairs and roof are of wood, the last mentioned covered with tar and gravel. Heating is by hot water, and lighting by electricity.

Plans, &c., prepared by this department.
Clerk of Works, J. Hughes.
Contractors, Snyder Bros.

ST. BONIFACE.

PUBLIC BUILDING.

A new heating furnace was put in; extensive repairs were made to cement footpaths and fence; a clock was supplied and repairs were made to counter, letter boxes and doors, under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

SOURIS.

PUBLIC BUILDING.

This building, which was described in my report of last year, is completed.

WESTASKIWIN.

PUBLIC BUILDING.

On August 15, 1911, a contract was entered into for the construction of this building, measuring 44 feet frontage by 50 feet in depth, two stories in brick with stone trimmings, on a concrete stone-faced basement. The floors of basement are concrete, the basement partitions brick, and the floors of lavatories, vestibules and post office public lobby tile, but elsewhere throughout, the floors and partitions as also the floors and roof are of wood. The basement contains a furnace room, a fuel room, a storage room, a toilet room and a stair passage; the ground floor the post office, a vestibule, a mail lobby, a weight and measures office and a stairway hall, and the first floor two offices, five living apartments, a bath room, a toilet room and a stairway hall.

Plans, &c., prepared by this department.
Heating is by hot water and lighting by electricity.
Clerk of Works, W. D. Benjamin Miller.
Contractors, The Brown Construction Co., of Winnipeg.

WINNIPEG.

NEW POST OFFICE.

A new observation gallery and a new store-room were built. There were supplied a new sorting case, stools, rubber strips, brass coat hooks, waste paper baskets, chairs, hardware, valves for heating apparatus, pulleys, arch plates and carbons. Repairs were

made to heating system, marble desks, blinds, dampers, chairs, brass wicket, joinery, carpentry, boxes, locks, plumbing and steamfitting. The basement was whitewashed inside, and the boilers were enamelled.

Work supervised by J. Ernest Cyr, resident superintendent, Winnipeg, Man.

OLD POST OFFICE.

This building is occupied by the Custom house, assistant Receiver General's office, the Inland Revenue office and the Indian Affairs office.

The Inland Revenue offices were supplied with furniture, 3 rugs and one screen.

For the customs, a new elevator was installed; blinds for all the windows, a large quantity of office furniture, a Brussels' rug, mats, hardware and vestibule doors were supplied; the doors were lettered; the vault was kalsomined; the doors were repaired, and repairs were made to plumbing, steamfitting and joinery, all under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

EXAMINING WAREHOUSE.

The building was fitted with fire-escapes; a new cable and new controller were put in elevator; hardware, &c., were supplied and repairs were made to plumbing, joinery and to brickwork of boiler. all under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

IMMIGRATION BUILDINGS NOS. 1, 2, 3, 4 AND 5, HIGGINS STREET.

General repairs were made to heating, lighting, plastering, eavestroughs, elevators, roofs, joinery, &c., and some matting and furniture were supplied, all under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

POSTAL STATION NO. 1.

This is a rented building situated in the Canadian Pacific Railway Terminal buildings.

POSTAL STATION "B."

Some plumbing was done and hardware supplied, under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

RAILWAY COMMISSION OFFICES.

These are rented offices in the Traders' Bank, 433 Main street. Linoleum and electric light fixtures were supplied and some repairs made to furniture, under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

WEIGHTS AND MEASURES.

This is a rented suite of offices in the Dingwall block, Alexander avenue.

A quantity of furniture was supplied, under the supervision of J. Ernest Cyr, resident superintendent, Winnipeg, Man.

PROVINCE OF SASKATCHEWAN.

BATTLEFORD.

PUBLIC BUILDING.

This building, which was described in my last annual report, is completed. Plans, &c., prepared by this department.

Clerk of Works, W. R. Latimer.

Contractors, M. A. Pigott & Sons.

ESTEVAN.

PUBLIC BUILDING.

The drainage was connected with the town sewage system.

Work supervised by W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

GRAVELBOURG.

POST OFFICE AND TELEGRAPH OFFICE.

A contract for the construction of this building on the north side of Fourth avenue and east side of Main street, was entered into September 30, 1911. It is a one-story wooden building with a mansard attic on a concrete walled and concrete floored basement, the chimney of brick and the drain a 4-inch tile to a hogshead sunk in yard and filled with stones. It measures 28 feet frontage by 26 feet in depth, exclusive of front vestibule, 8 feet by 3 feet 6 inches, as also outside stoops and steps. The basement is to contain the heating apparatus and fuel; the ground floor, excepting a 10 foot square telegraph office in N.W. corner in the post office, and in the attic is one bedroom.

Plans and specification prepared by this department.

Work supervised by W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

IMMIGRATION HALL.

This building, as also similar buildings at Kerrobut, Sask., Estevan, Sask., Castor, Alta., Tisdate, Sask., Edson, Alta., Phillips, Alta., Viking, Alta., Entwhistle, Alta., were built during the fiscal year by the Department of Immigration. No plans nor specification prepared by this Department.

HUMBOLDT.

PUBLIC BUILDING.

On August 16, 1911, a contract was entered into for the construction of this building, measuring 79 feet by 36 feet, on the corner of Main street and Franklin avenue, having two stories of brick with stone dressings on a stone basement, 52 feet of the length being surmounted by a wooden mansard attic; a 4-story tower at the street intersection included in the building. The principal partitions on basement, ground and first floors are brick; the basement floor concrete, and the vestibule, lavatories and public lobby floors of tile, but the remainder of the floors, partitions, roofs and stairs are of wood. There is a brick vault in the basement, the ground and the

first floor. The basement contains a shooting gallery, a furnace room, a vault, 2 storage rooms, a fuel room, a pump room and a stairway hall; the ground floor the post office, a vault, the examining warehouse, a weights and measures office, two lavatories and a vestibule; the first floor the customs long room, the collector's office, the customs records, two offices for inland revenue, a brick vault, an armoury, a C.O. office, two lavatory rooms and a stairs hall, while in the attic are 5 living rooms, a bath room and a staircase hall.

There is a hot air pump to supply water drawn from a well; the drainage is to a septic tank in the yard; the heating is by hot water, and the lighting by electricity.

Plans, &c., prepared by this department.
Clerk of Works, Wm. Driver.
Contractors, The Brown Construction Co.

LLOYDMINSTER.

PUBLIC BUILDING.

This building, for the construction of which a contract was entered into April 1, 1912, is to be two stories of brick on a concrete stone faced basement, is to be constructed on lots 36, 37 and 38 on the northeast corner of the intersection of Main and Church streets. It will consist of a main portion 45 feet by 51 feet, a wing in the rear extending 18 feet to the northward and 12 feet to the rear of the building, and an 18 by 12 foot projection in rear. The basement partitions are to be brick, the basement floor concrete, the floors of the lavatories and public lobby and vestibule ground floor of tile, but elsewhere throughout, the floors and partitions and the roof and stairs as well, are of wood.

The basement contains the furnace room, coal room, and customs storage room; the first floor the customs long room, the customs collector's office, the inland revenue long room, the inland revenue collector's office, 5 living rooms, a hall, two toilet rooms, a bath room.

Heating is by hot water; lighting by electricity; drainage to a septic tank, and water supply from a pump in basement driven by a hot air engine.

Plans, &c., prepared by this department.
Clerk of Works, Emerson E. Miller.
Contractors, F. E. Healey and Jos. M. Pigott.

MELFORT.

PUBLIC BUILDING.

On December 26, 1911, a contract was entered into for the construction of this building at the northeast corner of the intersection of Main street and Macleod avenue, consisting of a main portion two-story brick, with stone trimmings, on a stone basement, surmounted by a wooden mansard, with a 4-story and basement tower in left anterior angle, also a one-story and basement adjunct, built of similar material, 48 feet long by 32 feet deep, making a total frontage of 70 feet on Macleod avenue, and a frontage of 54 feet on Main street. The internal construction is mainly wood, but the partitions in basement are brick, the floor in basement is concrete, and the floors in the toilet rooms, post office public lobby and vestibule are of tile. The basement contains a shooting gallery, a furnace room, two fuel rooms, a storeroom, a toilet room and a staircase hall; the ground floor the post office, the weights and measures office, the customs examining warehouse, an armoury, a C.O. office, a toilet room, the mail entrance and two stairway halls; the first floor the customs long room, the collector's office, two inland revenue offices, a spare office, a stairway hall and two

toilet rooms, while in the attic are 5 living rooms, a bathroom, a pantry and a stairway hall.

Drainage is to a septic tank on the site.
Heating is by hot water, and lighting by electricity.
Plans, &c., prepared by this department.
Clerk of Works, J. W. Roscoe.
Contractors, The J. McDiarmid Co., of Winnipeg.

MOOSEJAW.

NEW PUBLIC BUILDING.

This building, a contract for the construction of which was entered into November 25, 1911, is being erected on the original post office building site, measures 91 feet by 119 feet on plan, has three stories of brick, faced on the two street fronts with ornate cut stone, a concrete basement faced on street front with cut stone, a mansard attic with cut stone dormers and cut stone angle clock tower in the left anterior angle, 5 stories, basement and lantern.

The floors and roof are iron and concrete, the partitions iron and asbestic, the floor covering generally is of wood, but the public lobby of post office and the stairway halls are of marble mosaic, the toilet rooms and vestibule of tile, and the corridor floors of terrazza. The stairways are of iron. There are two brick vaults, also two toilet rooms on each floor. All the corridors have marble skirtings. The plan of basement and ground floor is an oblong, but on the upper floors the median 30 feet in width of the rear extending 81 feet into the building is omitted, making each of these floors three sides of a hollow square.

The basement has heating apparatus, fuel, storage, cellarage, electrical and gas inspectors' room, motor and transformer room, fireproof vault, &c.; the ground floor the post office, the examining warehouse, the weights and measures office, two brick vaults, two toilet rooms, a mail entrance, a stair hall and a stair and elevator hall, besides vestibules; the first floor is for the inland revenue and customs offices; the second floor for the post office and meteorological service, and the attic floor for the Interior Department.

Heating is by hot water, and lighting by electricity.
Plans and specifications prepared by this department.
Clerk of Works, James Armstrong.
Contractors, The J. McDiarmid Co., of Winnipeg.

PUBLIC BUILDING.

Alterations were made, under the supervision of W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

IMMIGRATION HALL.

Sanitary drainage was installed and connected with the city sewage, involving a complete system of plumbing, concrete and brick work and carpentry, under the supervision of W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

PRINCE ALBERT.

SASKATCHEWAN PENITENTIARY WORKSHOPS.

This building, which was described in my last year's report, is completed.
Plans, &c., prepared by this department.
Clerk of Works, F. W. Dickenson.
Contractors, the Saskatchewan Building Construction Co.

REGINA.

PUBLIC BUILDING.

An electric passenger elevator was installed and the incidental works including a pent house on roof, carried out. Sorting cases were supplied to customs examining warehouse; the street letter boxes were painted; the dead letter office was supplied with 2 tables, 1 set of pigeon holes, 2 washstands, 4 leather cushions, 3 window awnings, a number of door plates and minor articles; the inland revenues offices were supplied with a filing cabinet and a door plate and the Department of Public Works with 1 filing cabinet, 1 wardrobe, 2 tables, 1 chair and 1 stool.

Work supervised by W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

DOMINION LANDS OFFICE.

Sundry renovations and some painting were effected, under the supervision of W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

IMMIGRATION HALL.

The W.C.'s and plumbing were overhauled and connections made with the city sewage system, under the supervision of W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

SASKATOON.

PUBLIC BUILDING.

Concrete footpaths and steps were laid on the west of the building, under the supervision of W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

WEYBURN.

PUBLIC BUILDING.

On October 11, 1911, a contract was entered into for the construction of this building, on the corner of Fourth street and Souris avenue, with frontages of 58 feet and 88 feet respectively, consisting of a main portion 57 feet by 51 feet and wing 36 feet by 37 feet, two stories of brick with stone trimming, on a concrete stone-faced basement, surmounted by a wooden mansard attic and having a four-story and basement tower in the angle at the intersection of the streets. In the basement, the floor is concrete and the partitions brick; in the lavatories, the vestibules and post office public lobby, the floors are of tile, elsewhere the floors and partitions, as also the stairs and roof are of wood. In the basement are the furnace room, fuel room, customs records rooms, two storage rooms and a shooting gallery; on the ground floor the post office, customs examining warehouse, weights and measures office, two toilet rooms; on the first floor the customs long room, collector's room, two offices for Inland Revenue, two offices, an armoury, a brick vault, two toilet rooms and a staircase hall, while the attic contains seven living rooms, a bath room and a staircase hall.

Heating is by hot water, and lighting by electricity.

Plans, &c., prepared by this department.

Contractors, Navin Bros.

WILLOW CREEK.

CATTLE QUARANTINE STATION.

Stables were erected, under the supervision of W. S. Mollard, Clerk of Works, Saskatchewan and Alberta, Regina.

PROVINCE OF ALBERTA.

CALGARY.

IMMIGRATION BUILDING.

A contract was entered into for the construction of this building, on the northwest corner of the intersection of First street and Tenth avenue west, measuring 62 feet 6 inches frontage by 42 feet 6 inches in depth. It has two stories of brick with stone trimmings, surmounted by a wooden mansard and on a stone basement; brick partitions and cement floors in basement, tile floor in vestibule, lavatory and bathrooms, and wood floors, partitions, roof and stairway elsewhere.

The basement has a furnace room, two fuel rooms, a laundry, a men's bath room, a women's bath room, a men's lavatory, a women's lavatory and a staircase hall; the ground floor a vestibule, a hall, a stairway hall, an office, a waiting room, a dining room, 2 kitchens, 2 caretaker's rooms and 2 bedrooms, while the first floor has a stairway hall and 12 bedrooms.

Heating is by hot water, and lighting by electricity.

Plans, &c., prepared by this department.

Clerk of Works, Martin Lathanwaite.

Contractors, J. McDiarmid Co.

STRATHCONA.

PUBLIC BUILDING.

On June 18, 1911, a contract was entered into for the construction of this building, which is situated on the southwest corner of First street west and White avenue, on lots 1 and 2, block 63; a brick building with cut stone dressings on a concrete stone-faced basement, consisting of a 2-story and basement, main portion 73 feet 6 inches by 50 feet, having a cut stone clock tower two stories higher, 14 feet square, on the northwest angle, and a one-story adjunct with unexcavated basement, 34 feet by 25 feet. The basement, excepting a lavatory room, a main stairway hall and a fuel room, is undivided and is to contain the heating apparatus; the ground floor of the main portion is the post office and of the adjunct, the examining warehouse and weights and measures office; the first floor, the customs offices and inland revenue offices. The partitions in basement, ground floor and a part of first floor are of brick. The floor of the basement, with the exception of that of the lavatory and of the public lobby ground floor, in tile, is of concrete, and the remaining partitions and floors, as also the roof and stairs, are of wood; the roof covered with tar and gravel. There is a brick vault on both ground and first floors. Heating is by hot water, and lighting by electricity.

Plans, &c., prepared by this department.

Contractors, M. A. Piggott & Sons.

ARMOURY.

June 18, 1911, a contract was entered into for the construction of this building, on a site having frontage on Griesbach avenue, with West Railway street on the left.

It is a 2-story building of brick with stone trimmings, on a concrete stone-faced basement, having a frontage of 88 feet by a depth of 50 feet and containing: in the basement, a bowling alley, a shooting gallery, a lavatory, a mobilization storeroom, a caretaker's store room, a boiler room, a fuel room, a passage and a stairway hall; on

the ground floor, an assembly hall, a cavalry harness and storeroom, an engineer's harness and storeroom, a cavalry C.O. room, two infantry armouries, a Q.M. stores, a lavatory, two stairway halls and two vestibules; on the first floor a lecture room, an officers' assembly room, a sergeants' assembly room, two C.O. rooms, two spare rooms, 4 living rooms and a bath room. The floor of basement is concrete and that of lavatory, ground floor, tile, but the remaining floors as well as stairs and a few of the partitions are of wood, the partitions generally being brick.

Heating is by hot water, and lighting by electricity.

Plans, &c., prepared by this department.

Clerk of Works, W. G. Congdon.

Contractors, M. A. Pigott & Sons, of Kenora.

WESTASKIWIN.

(This building is described at page 50.)

PROVINCE OF BRITISH COLUMBIA.

CHILLIWACK.

PUBLIC BUILDING.

On December 27, 1911, a contract was entered into for the construction of this building, measuring 53 feet by 65 feet, consisting of a two-story brick on a concrete stone-faced basement, main portion, measuring 65 feet by 36 feet, on a one-story and basement portion of similar materials, measuring 43 feet by 17 feet. The floors, stairs, partitions and roof are wood, excepting the basement floor which is cement, the basement partitions brick and the floors of public lobby, ground floor, entrance vestibule and toilet rooms which are tile. The basement contains a furnace room, a fuel room, stairway and cellerage; the ground floor, the post office, the examining warehouse, the weights and measures office and the mail entrance; the first floor, the customs long room, collector of customs' office, inland revenue office, 2 toilet rooms, a bathroom, a pantry and four living rooms.

The present post office building was moved back to the rear of the lot and a platform was built from the street thereto, to ensure the business being carried on uninterruptedly until the new building is completed.

Plans, &c., prepared by this department.

Clerk of Works, J. C. Robertson.

Contractor, Edward Hunt.

CRANBROOK.

PUBLIC BUILDING.

August 19, 1911, a contract was entered into for the construction of this building, fronting on Baker street with Norbury avenue on the right, consisting of a main two-story brick portion, with stone trimmings, on a concrete stone-faced basement, 55 feet frontage by 57 feet depth with a one-story and unexcavated basement adjunct 34 feet by 17 feet 6 inches in rear. There is a four-story tower on the street angle. The basement floor is concrete, the floor of public lobby, vestibule and toilet rooms are tiled, the basement partitions are brick, but the remaining floors and partitions as also the stairs and roof are wood. The basement contains a furnace room, a coal room, a brick vault and a stairway hall; the ground floor, main portion, the post office, vestibule, stairway hall, brick vault, mail lobby, and in adjunct, examining warehouse, weights and measures office and toilet room; in attic two Inland Revenue offices, a toilet room, customs long room, customs collector and four living rooms.

The drainage is to a septic tank on the site, heating is by hot water and lighting by electricity.

Plans, &c., prepared by this department.
Clerk of Works, M. McEachren.
Contractors, The McCallum Co.

FERNIE.

PUBLIC BUILDING.

A roadway was constructed in rear of building from street to lane, and a lawn made between roadway and rear of building. The walls of public lobby, stairway and upper hall were painted and varnished. An exit from furnace room to allow of ashes being taken direct therefrom, was built. The post office fittings were moved from the old to the new building and some window awnings supplied the post office; to the custom house were supplied an inside safe door, safe door lock, combination lock, filing cabinet, typewriter desk, revolving and tilting chairs, arm chairs, &c.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

GRAND FORKS.

PUBLIC BUILDING.

A contract was entered into on August 28, 1911, for the construction of this building on Third street at the intersection with Bridge street. It is to be a two-story brick building with stone dressing and on a stone basement, consisting of a main portion 53 feet 5 inches frontage by 43 feet 7 inches deep with an adjunct 44 feet 4 inches long by 23 feet deep in rear. The basement is to contain fuel room, boiler room, lavatory, vault, stairway hall and store room; the ground floor, the post office in the main portion, and the examining warehouse, weights and measures, vault, mail lobby and stairway hall in the adjunct; the attic floor, the customs and Inland Revenue offices, lavatory, bath room and living apartments. With the exception of the basement floor which is to be concrete and the basement partitions which are to be brick, the floors, partitions, stairs and roof are to be of wood.

Plans, &c., prepared by this department.
Clerk of Works, Geo. D. Clark.
Contractors, B. LeQuine.

KAMLOOPS.

PUBLIC BUILDING.

The plumbing was repaired, some extra electric lights were put in and some switches therefor, under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

NANAIMO.

PUBLIC BUILDING.

The addition to this building, which was described in my report of last year, is completed, piped with gas, and has arc lights installed, as also 5 lights wired for and installed in basement. Windows destroyed by a mine explosion were renewed, the flag pole painted and general repairs made to plumbing.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

NELSON.

PUBLIC BUILDING ADDITION.

This is a one-story adjunct situated in the re-entrant angle of the rear of the building, measuring on plan, 36 feet by 29 feet. That part of the rear wall of the post office which abuts on the addition, is removed, and iron girders are inserted to support the superincumbent wall. This work was contracted for on April 13, 1911, and is now completed.

Plans, &c., prepared by this department.

The whole of the interior of the original building was cleaned and repainted with the exception of the attic floor; the customs long room was enlarged; a new floor drain was put in basement, the catch basin reconstructed, the rainwater drain cleared out and repairs effected to windows, carpentry, plumbing, chimney, furnace pipe, street letter boxes and post office letter boxes, and a rug was supplied.

Work, inclusive of the addition, supervised by Wm. Henderson, resident architect, Victoria, B.C.

Contractor for addition, John Burns & Son.

NEW WESTMINSTER.

PUBLIC BUILDING.

A cement platform and gutter was laid along rear wall of building; the flag pole was painted; two desks, two chairs and cork carpet were supplied; the Dominion Lands office was repainted; alterations and repairs were made to the examining warehouse, and repairs were made to locks, keys, &c.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

INDIAN AND FISHERIES BUILDING.

The flag pole was painted; there were supplied one plan case, one card cabinet with filing sections, two desks and two armchairs, and general repairs were made to plumbing.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

PRINCE RUPERT QUARANTINE STATION.

HOSPITAL.

This building, which was described in my report of last year is completed and fitted up for occupation.

REVELSTOKE.

PUBLIC BUILDING.

The street letter boxes were painted, under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

ROSSLAND.

PUBLIC BUILDING.

The wagon drive to mail delivery entrance was concreted and repairs were done to plumbing, bay windows, doors and door springs, all under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

VANCOUVER.

NEW PUBLIC BUILDING.

Further fittings, carpets and furniture were supplied to the post office and customs department, under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

ORIGINAL POST OFFICE, &C.

Alterations were made to fit up offices for Dominion Express Co., and there were supplied to the Inland Revenue Department: wardrobe and book case sections, a desk, chairs, curtains and holders, carpet and desk lamp; to the steamboat inspector's office: cabinets, partitions, &c.; to the superintendent of dredging: a clock, a table, a desk, a filing cabinet and chairs; to the gas inspector's office: filing sections, book case, filing cabinet, two desks, a chair and a table; to the marine and fisheries: a desk, a chair and a file, while new flooring was laid and sundry minor alterations made.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

NEW EXAMINING WAREHOUSE.

In process of construction on the corner of Howe and Cordova streets, with a lane on each of the two remaining sides and frontages on streets of 102 and 120 feet respectively. There are three large freight entrances to the sub-basement on Cordova street from which the surface of site slopes upward so as to bring the fourth and remaining freight entrance in the middle of the ground floor. Along the Cordova-street front is a driveway 11 feet 10 inches wide, that part opposite the entrances being covered by a copper and glass canopy, and there is a similar canopy to the ground floor freight entrance. The outer walls of sub-basement, basement and ground floor are stone backed with brick, those of first- second and third floors of brick; the interior columns, piers, floors, partitions and roof being steel and concrete and the stairs iron and slate.

In the centre of the building are three freight elevators travelling from sub-basement to third floor and, at the stairway near the Howe street front, a passenger elevator having the same travel. The portion fronting on Cordova street, and which is lighted by windows, consists of the freight receiving room and office, the remaining portion which has no daylight, contains the boiler room, the fuel room and storage room; the basement is lighted on all sides and, excepting two offices and a stairway, which occupy the entire Howe street end, and a lavatory in the middle of the opposite end, the entire flat is for storage. The ground floor, first floor, second floor and third floor, are similar in arrangement to the basement, excepting that the ground floor has an office entrance in the middle of Howe street front, and a freight entrance in lane on flank.

VERNON.

PUBLIC BUILDING.

This building, which was described in my report of last year, is still in progress of construction.

Plans, &c., prepared by this department.
Clerk of Works, F. B. Cossett.
Contractor, W. A. Coryderman.

VICTORIA.

MARINE BUILDING, OLD CUSTOM HOUSE.

The offices of the Indian Department and the Marine and Fisheries Department were repainted three coats and had woodwork varnished; the flag pole was repainted and there were supplied to the Marine and Fisheries Department two desks, a new door, chairs, a four-drawer cabinet, an index cabinet and linoleum, and to the health of animals branch a toilet set, a slop bucket, a washstand and mirror, all under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

OLD POST OFFICE.

A new lavatory was fitted up with closets, sinks, urinals, &c., and the waste, vent and water pipes were refitted; the drain was cleaned, the down pipes were taken out and replaced, the basins, taps, W.C. tanks were repaired, new shelving was provided, a safe and desk were supplied, some flooring stained and the roof extensively repaired, all under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

PUBLIC BUILDING.

Interior walls and ceilings were repaired and cleaned and those of the corridors leading from appraiser's office to post office, of the stairways from ground floor to fourth floor, of the corridors on second floor, of the chief locker's room, the Chinese room, the customs long room, the collector's room, the chief clerk's room, the appraiser's room and the clerk's room were painted. The flag poles and fire-escapes were painted as were the ceilings, walls and woodwork in the janitor's quarters. The down-pipes were cleared out and overhauled. The concrete sidewalk about building was relaid. Changes were made in the position of screen and other post office fittings; the vault in M.O. office was fitted up, the parcels delivery office in basement was fitted up for Christmas trade; typewriter desk was supplied P.O. inspector; a pigeon-hole case was supplied to P.O. general delivery; linoleum was supplied money order office and general delivery office and Inland Revenue Department; desks and office chairs were supplied P. O. inspector; a desk and typewriter to Public Works Department, a tilting cabinet to collector of customs; a desk, chair and standing desk and office chairs to customs long room, and a glass counter-top to the Dominion Savings Bank. A doorway was cut out in customs office, a new dormer window was inserted in roof and repairs were done to passenger elevator, stamping machine, locks, lock boxes, keys, floors, safe, bells, joinery, and freight elevator. The street boxes were painted.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

IMMIGRATION HOSPITAL.

A brick ash pit with wood cover and frames was excavated for and built, the cover cased in galvanized iron; a fireproof safe was supplied the immigration agent; some crossbars were put on inside of windows, some shelving in basement and the plumbing, carpentry and joinery were repaired.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

WILLIAMS HEAD.

QUARANTINE STATION.

The assistant superintendent's residence was papered, painted and fitted up with a bath, toilet outfit, wash basins, &c. Two smoke stacks and three flag poles were painted and repairs were made to the carpentry and plumbing.

Work done under the supervision of Wm. Henderson, resident architect, Victoria, B.C.

STATEMENT OF LEASES

OF

BUILDINGS AND GROUNDS OCCUPIED BY THE GOVERNMENT

AND

PAID FOR BY THE DEPARTMENT OF PUBLIC WORKS

BY

J. G. TAYLOR

OTTAWA, August 28, 1912.

To DAVID EWART, Esq.,
Chief Architect,
Public Works Department,
Ottawa.

DEAR SIR,—Annexed please find list of buildings and sites rented by Public Works Department, also index of names of lessors.

Yours truly,

J. G. TAYLOR.

Athabaska Landing, Alta.—Lot 14, block 2, Hudson's Bay Co.'s Reserve. Lessor, Isaac Gagnon. Lease expires, October 30, 1911. Used for immigration purposes. Rent, $15 a month.

Asbestos, P.Q.—One room, southeast side of building, 20 x 22 feet. Lessor, Financier and Artistique Co., Ltd. Lease expires, April 5, 1912. Used for post office. Rent, $180 a year, of which $105 is paid by Department, and $75 by postmaster; heating and lighting by lessors.

Battleford, Sask.—Lots 41 and 42, south 24th street, west of Central avenue. Lessor, Town of Battleford. Lease expires April 19, 1919. Used for immigration purposes. Rent, amount of municipal taxes.

Black Lake.—Room 18 x 26 feet on first floor of building on Main street. Lessor, Ovide Carrier. Lease expires, December 23, 1912, with option to renew for one year on same terms. Used for post office. Rent, $300 a year, of which $150 is paid by Department, and $150 by postmaster. Option to renew for one year on same terms. Heating and lighting by lessor.

Blenheim, Ont.—Portion of town hall building. Lessor, town of Blenheim. Lease expires April 1, 1915. Used for post office. Rent, $350 a year, of which $200 is paid by Department, and $150 by postmaster.

Brandon, Man.—Room on fourth floor of lessor's building. Lessors, Clement Bros. Lease expires May 1, 1912, with option to renew from month to month. Used for Forestry Department. Rent, $40 a month. Heating by lessors.

Calgary, Alta.—Three stores in Allan block adjoining Calgary post office. Lessor, A. Allan. Authorized by chief architect's letter of October 28, 1910, to J. J. O'Gara. No lease. Used for Customs and Inland Revenue. Rent, $375 a month. Premises given up January 20, 1912.

Calgary, Alta.—Site for immigration hall. Lessor, Canadian Pacific Railway. Lease expires August 1, 1925, but may be terminated any time by lessor on one month's notice. Rent $10 a year.

Calgary, Alta.—First floor, corner room in Costello block. Lessor, Mrs. E. Costello. No lease; arrangement by letter from chief architect to J. J. O'Gara, dated Novem-

ber 12, 1909. Used for Weights and Measures. Rent, $30 a month. Heating by lessor; lighting by department.

Calgary, Alta.—Five back rooms on fourth floor of Lecson-Lineham block, with vault—rooms 407 to 411, inclusive. Lessor, J. A. Irvine. No lease; arrangement by chief architect's letter of November 8, 1910 to J. J. O'Gara. Used for Commissioner of Irrigation. Rent, $125 a month clear.

Calgary, Alta.—East half of David block, ground floor and use of vault and toilets. Lessor, Annie McDougall. Lease expires January 20, 1915. Used for examining warehouse. Rent $500 a month.

Calgary, Alta.—Rooms 29 and 28, each containing about 480 sup. feet in Thomas block. Lessors, R. A. Thomas & Co. No. lease, arrangement by chief architect's letter to L. B. Elliott, district engineer, dated April 3, 1912. Temporary quarters. Used by Wm. Millar, inspector of Rocky Mountain Forest Reserve. Rent, $80 a month.

Calgary, Alta.—Rooms 30 and 31 Thomas block. Lessors, R. C. Thomas & Co. No lease; arrangement by letter of L. B. Elliott, district engineer, to chief architect, dated June 20, 1912. Used for Mr. Helmer, supervisor of Bow River Division of Rocky Mountain Forest Reserve. Rent, $50 a month.

Calgary, Alta.—Office in Cadogan block, corner 8th avenue and 2nd streets. Lessor, R. C. Thomas. No lease; arrangement by chief architect's letter to J. J. O'Gara, dated July 28, 1911. Used for office of inspector of gas and electricity. Rent, $35 a month.

Calgary, Alta.—Four rooms fronting on 13th avenue, Bruner block, third floor, with one back room in rear for entrance. Lessor, Sutherland Realty Co. No lease; arrangement by telegram, dated April 15, 1912, chief architect to L. B. Elliott. Used for Railway Commission. Rent, $100 a month.

Charlottetown, P.E.I.—Two rooms on ground floor of building on Great George street. Lessor, Mrs. L. B. Bagnall. No lease; arrangement by letter of chief architect to W. D. Scott, Superintendent of Immigration, dated July 9, 1912. Used for temporary immigration office. Rent, $12 a month.

Clair, N.B.—Room in 'Clair House.' Lessor, J. T. Clair. No lease; Superintendent of Immigration advises secretary Public Works Department that this room has been rented February, 16, 1911. Used for immigration inspector. Rent, $10 a month, including light, heat, attendance, cleaning, &c.

Digby, N.S.—Privilege of laying sewer from public building. Lessors, Geo. E. E. Nichols and M. Edith Lynch. No lease; Deputy Minister authorizes payment of rental, May 3, 1912. Rental paid for six years to December 31, 1911. Rental, $1 per annum.

Dundas, Ont.—Ground floor brick building, 40 feet by 37 feet 7 inches internally. Lessor, J. D. Pennington, who purchased building from R. T. Wilson, the original lessor. Lease expired July 1, 1906. Rent originally $500, but increased to $600 per annum from July 1, 1910. Heating and lighting by lessee.

Edmonton, Alta.—Part of station grounds of lessors. Lessors, Canadian Northern Railway Co. Lease dated August 1, 1909, expires on one month's notice to lessors or one month's notice form lessors . Used as site immigration hall. Rent, $1 per annum.

Edmonton, Alta.—Room in Board of Trade building. Lessors, Edmonton Board of Trade. Lease expired April 1, 1911, with option to renew for one or two years at same terms. Used for assistant inspector of weights and measures. Rent, $240 per annum. Heating by lessors; lighting by lessee.

Edmonton, Alta.—Ground floor and basement of a brick and concrete building, known as the Kelly block, situate on Jasper avenue. Lessor, John Kelly. Lease expires November 1, 1913, and thereafter lessee has right to occupy from month to month at same rental. Used as Dominion Lands Office. Rent, $450 a month. Heating and cleaning by lessor.

Edmonton, Alta.—Premises on lot 23, block 2, river lot 10, east side Fraser avenue. Lessor, Arthur William Ormsby. Lease expires May 30, 1913. Used for offices for customs examining warehouse. Rent, $1,740 per annum. Heating and lighting by lessor; caretaking by Department.

Entwhistle, Alta.—Lots 38, 39 and 40 in block 6. Lessor, Wm. LeBreton Ross, local treasurer, Winnipeg. Lease expires, October 8, 1931, with option to renew for further 21 years on same terms. Used for immigration hall site. Rent, $1 per annum.

Glace Bay Beach, Cape Breton County, N.S.—Lot of land. Lessors, Dominion Coal Co., Ltd. Lease expires, January 30, 1928, with option to renew upon request of lessee six months previous to expiry for a like period of 20 years. Used for the construction and proposed protection wall at Glace Bay beach. Rent, $1 per annum.

Grand Falls, N.B.—Part of ground floor of lessor's building with use of the back coal storage and yard and exit into yard in common with other tenants. Lessor, James E. McCormack. Lease expired January 1, 1909, with option to renew for one year or more by giving three months notice in writing. Used for post office. Rent, $120 per annum.

Grand Prairie.—Lands office. Lessor, J. Fletcher and A. S. McLean. No lease; Interior Department advise having rented this office on February 28, 1912, and Deputy Minister of Public Works Department authorizes payment on March 2, 1912. Rent, $20 a month.

Grouard, Alta.—Building 20 x 22 feet. Lessor, Peter C. Tompkins. No lease; authorized by chief architect's letter of December 31, 1909. Original rent, $25 a month, but offices enlarged and rent increased to $35 a month from August 31, 1911. Used for Lands Office.

Hamilton, Ont.—Office accommodation in Munroe building, corner Main and Hughson streets. Lessors, L. Munro. No lease; authorized by letter of secretary Public Works Department to Superintendent of Immigration on May 23, 1912. Used for immigration office. Rent, $20 a month.

Hamilton, Ont.—Westerly portion ground floor, two story building, south side Kinrade avenue and Barton streets, with cellar accommodation and rear entrance. Lessor, Mrs. Clara Jane Swales. Lease expires, November, 1913. Used for post office station 'B.' Rent, $840 per annum. Heating and cleaning by lessor.

Hamilton, Ont.—Quarters in Winer building. Lessors, Bank of Nova Scotia. No lease; authorized by telegram from chief architect, dated December 19, 1911. Used for temporary quarters for distribution of Christmas mail. Rent, $60 from December, 1911, to January 2, 1912.

Herbert, Sask.—Parcel of land described as lot No. 5, in block No. 15, on record in Land Titles office as plan No. a, 2815, with buildings thereon and use of yard in

common with other tenants. Lessor, John F. Weibe. Lease expired October 1, 1911. Used for immigration hall. Rent, $150 from April 1 to October 1, 1911.

Humboldt, Sask.—Office building owned by A. J. Borget. Lessor, A. J. Borget. No lease; this building was leased from month to month by Department of Interior. See letter from agent Dominion Lands, Humboldt, to secretary Department of Interior, dated July 12, 1910, on file 1115-1. Used for Lands office. Rent, $60 per month.

Indian Head, Sask.—Four rooms in two story building (brick), being whole of second floor. Lessor, Arthur J. Osment. Lease expired September, 1911. Used for staff in charge of tree distribution. Rent, $300 per annum. Heating, lighting and cleaning by lessee.

Irvine, Alta.—Building 20 by 38 feet. Lessor, Irvine School District No. 892. Lease expired May 1, 1912. Used for immigration purposes. Rent, $15 per month.

Kerrobert, Sask.—Site immigration hall. Lessor, Canadian Pacific Railway. Expires May 1, 1912, and afterwards from year to year, but may be terminated by lessor on one month's notice. Rent, $1, per annum.

Kingston, Ont.—Premises on Market square, ground floor of tenement No. 8; the ground floor and the second floor of tenement No. 10, and the whole of tenements Nos. 12 and 14, street number. Lessors, representatives of Gildersleeve estate, Kingston, represented by Henry Herchmer Gildersleeve and Helen Emily Herchmer, of Belleville, committee of the person and estate of Lawrence Kirby Herchmer, a person of unsound mind. Lease expires July 1, 1928, with option to renew for 21 years on same conditions. Rent, $1,762 per annum. Used for Federal public service—Inland Revenue, Customs, Marine and Fisheries and Railways and Canals. Heating and lighting by Department.

Kingston, Ont.—Premises situate on parts of lots 294 and 295, west Bagot street, frontage 134 feet, depth 119 feet, south side of Brock and Clarence streets, with brick building, stables and sheds. Lessor, Thos. J. Polley, 418 8th street west, Calgary. Lease expires May 1, 1914, with option to renew for five years upon three months' written notice; also option to buy at $10,000. Used for additional stores, Militia Department. Rent, $1,000 per annum. Ground rent by lessors.

Lethbridge, Alta.—All of Singer building and ground floor and lavatory in basement of premises, known as the post office block. Lessor, John David Higginbotham. Lease expires March 1, 1914, with option to continue from month to month on same terms. Used for post office. Rent, $3,300 per annum. Heating and janitor by lessor.

Lethbridge, Alta.—Two rooms in Hull block, Nos. 5 and 6; 1 room 33 square feet, rent $30 a month; 1 room, 450 square feet, rent $35 a month, or 99·61 cents per sup. foot per annum. Lessor, W. R. Hull & Co. No lease; authorized by chief architect's letter to McArthur & Whidden of May 17, 1911. Used for inspector of Inland Revenue. Rent, $780 per annum. Heating and caretaking by lessor. Lighting by lessee.

L'Orignal, Ont.—West half of two story brick building, north side King street, L'Orignal and a strip of land 21 feet in width by 30 in depth at rear. Lessor, Alexandre Chatelaine. Lease expires January 1, 1919. Used for post office. Rent, $250 per annum, $125 paid by Department, and $125 by postmaster. Heating, lighting and cleaning by postmaster.

Montreal.—Office southwest corner of baggage room of Windsor street station, Montreal. Lessor, Canadian Pacific Railway. Lease expires November 1, 1908, or

lease to be terminated by lessor at any time by mailing (postage paid) at post office in Montreal a notice addressed to the Minister of Public Works, Ottawa, naming a day at least three months from the mailing thereof. Used for mail room. Rent, $213 per annum in advance. Heating by lessor.

Montreal.—All of brick and stone building St. Paul street, Nos. 272 and 274, extending through to Nos. 113 and 115 Commissioners street; five stories on Commissioners street, four stories on St. Paul street, with cement basement Lessor, Leandre Joseph Ethier, city attorney, Montreal, the legal representative of the estate of Simeon Delorme, Montreal. Lease expires May 1, 1914. Used for military stores and offices for the Department of Militia and Defence. Rent, $2,000 per annum.

Montreal.—Room 508 Merchants Bank building, Montreal. Lessor, Merchants Bank of Canada. No lease; Assistant Deputy Minister of Public Works Department authorizes this on November 23, 1910. Used for office for Mr. Gingras. Rent, $250 per annum.

Montreal.—Room 103 St. Francois Xavier street, Montreal. Lessor, Seminaire St. Sulpice. Area of room rented is 264 feet, and annual rental $1.35 per sq. foot. No lease; H. N. Lymburner on April 17, 1912 advises chief architect that in accordance with verbal direction from Minister of Public Works he has rented these premises. Used for offices for Mr. Deschamps. Rent, $356.40 per annum.

Montreal.—Room 407 at 103 St. Francois Xavier street. Lessor, Seminaire St. Sulpice. No lease; H. N. Lymburner advises on September 12, 1911, that he has given letter to M. M. of St. Sulpice that his occupation of this office will be during the time alterations last at Montreal general post office (in accordance with directions from Department). Used for offices for H. N. Lymburner, Superintendent of buildings. Rental of $370 per annum, equals $1 for square foot of space used. Heating, cleaning and elevator service by lessor.

Montreal.—Stone house No. 306 St. Antoine street, Montreal. Lessor, Albert E. Brown, agent Rodier estate. Lease expires May 1, 1913, with option to continue for an additional year on notice to lessor before November, 1912, on same terms. Used for detention hospital. Rent, $3,500 per annum. Cleaning by lessee.

Montreal.—Ground floor 229 and 231 Amherst street, and use of lane in rear. lessor, C. E. Thibault. Lease expired February 1, 1910, with right to quit premises at end of each year by giving lessor three months' notice in writing. Used for temporary postal station ' C.' Rent, $1,000 per annum. Heating and lighting by lessee.

Montreal.—St. Guneconde ward, ground floor municipal building, corner Vinet and Richelieu streets, with vault, toilet room and basement, with entrance on Vinet street. Lessor, city of St. Guneconde, now city of Montreal. Lease expires June, 1925. Used for post office. Rent, $1,750 per annum. Heating, lighting and cleaning by lessor.

Moosejaw, Sask.—Office in Imperial Bank building. Lessor, Gravel & Gravel. No lease; authorized by Deputy Minister. See file 2115-1. Used for immigration purposes. Rental, $10 per month.

Moosejaw, Sask.—Rooms in Grayson block. Lessor, Wm. Grayson. No lease; rented from Wm. Grayson April 1, 1907, by Mr. Knowles, M.P., and authorized by Department. Used for Inland Revenue. Rent, $30 per month.

Moosejaw, Sask.—Four rooms in Russell block, northwest corner 9th avenue and River street, on third floor. Lessor, Edward N. Hopkins and Arthur Latham. Lease expires February 1, 1912, with option of renewal at same terms upon request two

months prior to expiry of lease, with privilege to lessee to terminate lease so renewed at any time by giving two months' notice to lessor. Used for railway mail service staff. Rent, $80 a month. Heating by lessor; lighting by lessee.

Moosejaw, Sask.—Lots Nos. 27 and 28 in block 125 on Manitoba street. Lessor, City of Moosejaw. Lease expires April 15, 1914, with option to renew for other five years. Used for immigration. Rent, $100 per annum.

Moosejaw, Sask.—Second story of MacLeod's building, Main street. Lessor, Malcolm John MacLeod. Lease expires March, 1914. Rent, $1,800 per annum. Heating, lighting and cleaning by lessor.

North Battleford.—Site for immigration hall. Lessor, Canadian Northern Railway Co. Lease expired April 30, 1909. Lessee or lessor may terminate on one month's notice in writing. Rent, $1 per annum.

North Battleford.—Two front upstairs rooms in building on lot No. 16, block 7, with use of yard in common with other tenants. Lessor, Frederick Edwards. Lease expires May 5, 1912. Used for immigration purposes. Rent, $25 a month.

North Portal, Sask.—Site for immigration hall. Lessor, Canadian Pacific Railway. Lease expired June 1, 1911, and afterwards from year to year. Rent, $1 per annum.

North Sydney, N.S.—Second story flat of Y.M.C.A. building. Lessor, trustees for Y.M.C.A. Lease expires May 1, 1916. Rent, $600. Heating by lessors; lighting by lessee.

North Vancouver, B.C.—Premises 78 Lonsdale avenue. Lessor, J. C. Keith. Lease expires July 1, 1912, with option to renew for one year or any portion thereof on same conditions and rental. Rent, $1,200 per annum.

Ottawa.—Room with vault and lavatory at rear of New York Herald's office in Victoria Chambers building. Lessor's W. A. Allan and Sanford H. Fleming. Used for International Fisheries Commission. Lease expired January 1, 1912. Rent, $40 per month. Heating and lighting by lessors.

Ottawa.—Rooms in Aylmer Annex, Slater street, Ottawa. Lessor, Sir H. N. Bate. No lease, but arrangement made to lease for three years from October 1, 1910, to October 1, 1913, and authorized by chief architect September 24, 1910. Used for Offices for Lt.-Colonel Biggar, Director of Transport and Supplies, and his staff. Rent, $45 a month.

Ottawa.—Premises 10-12 Albert street, with right of way on east of premises. Lessors, H. N. Bate & Sons, Ltd. Lease expires May 1, 1916. Used for examining warehouse and express office. Rent, $1,600 per annum.

Ottawa.—Five upper floors and part of basement in Rosenthal building, Sparks street. Lessors, Henry Birks & Sons. Lease expires October 1, 1916. Used for offices of Marine and Fisheries and Inland Revenue and Public Works or any other branch of government service. Rent, $17,000 per annum. Heating and power.

Ottawa.—Five rooms on first floor of lessor's building. Lessor, R. Blackburn. Lease expires May 1, 1912. Used for Mines Branch. Rent, $800 per annum. Heating by lessor.

Ottawa.—Union Bank building, Metcalfe street, six floors at rear of Langevin block. Lessor, R. L. & R. Blackburn. Lease expires January 6, 1917. Used for Interior Department, Post Office Department and other branches of government service. Rent, $13,000 per annum. Heating by lessors.

Ottawa.—Room 214, Trafalgar building. Lessor, J. C. Brennan. No lease, chief architect's letter to J. Shearer of February 7, 1912, authorizes rental of this. Used for Civil Service Commission. Rent, $182 per annum—equals 79·87 cents a foot.

Ottawa.—Room 213, Trafalgar building. Lessor, J. C. Brennan. No lease; authorized by chief architect's letter to J. Shearer of May 3, 1911. Used for Civil Service Commission, Interior, External Affairs, Trade and Commerce. Rent, $244 per annum.

Ottawa.—Room 404, Trafalgar building. Lessor, J. C. Brennan. No lease; authorized by chief architect January 10 and October 14, 1911. Used for Chief Astronomer. Rent, $272.95 per annum.

Ottawa.—Room 104 and 112 in rear in Trafalgar building. Lessor, J. C. Brennan. No lease; authorized by Deputy Minister on March 8, 1910. Used for Annuities Branch. Rent, $500 per annum.

Ottawa.—Forty-four rooms in Trafalgar building, corner of Bank and Queen streets. Lessor, J. C. Brennan. Lease expires May 1, 1913. Used for offices for Interior Department, Civil Service Commission, Trade and Commerce and Department of External Affairs. Rent, $11,964. Heating, lighting, cleaning and elevator by lessor.

Ottawa.—Dwelling house and premises No. 12 Emmett street, excepting stable facing Lisgar street, which lessor may remove at any time. Lessor, Edmund Wood Clark. Used for militia stores. Lease expires April 30, 1913, with option of renewal for two years at the request of lessee three months prior of the determination of lease at same rental and on same conditions, excepting this covenant for renewal. Rent, $40 per month.

Ottawa.—Suite of offices, corner of Sussex and Clarence streets. Lessor, Victoria, Dube. Used for French translators. No lease; authorized by chief architect April 30, 1904. Rent, $50 a month. Surrendered to lessor on April 1, 1912.

Ottawa.—First and second floors of building 113-115 Rideau street, corner of William, with small shed at rear. Lessors, J. B. Duford and W. G. Charleson. Lease expires February 20, 1916. Used for Militia Department. Rent, $4,700 per annum. Heating by lessors.

Ottawa.—Additional space at 111 Rideau street. Lessors, J. B. Duford and W. G. Charleson. No lease; authorized by chief architect February 15, 1912. Used by Militia Department. Rent, $2,353.60 per annum.

Ottawa.—Rooms northeast end of Egan building, 25 Sparks street, Ottawa. Lessors, Egan Estate Co., Ltd. No lease; but arrangement expires April, 1912. Authorized file 1017-1, May 10, 1911. Used for Assistant Secretary Interior Department. Rent, $300 per annum.

Ottawa.—Brick building north side of Sparks street, No. 347, consisting of basement and three storeys. Lessor, Thomas Fleming. Lease expires April 1, 1914. Used for militia stores. Rent, $960 per annum.

Ottawa.—Easement for projection of about two feet beyond line of division between southeast corner of roof of Langevin block and property of George H. Perley. Lessor, George Halsey Perley. Lease assigned on April 30, 1903, to Wm. Graham and John Graham, carrying on business as Graham Bros. Rent, $5 per annum and a cash payment of $600. Lease expires October 1, 1918, renewable at expiry for 21 years and afterwards for similar periods at same rental.

Ottawa.—Large room and small room on second floor, northwest corner Sparks and Metcalfe streets. Lessor, The Great Northwestern Telegraph Co. of Canada. Used for Conservation Commission. Lease expires November 30, 1913. Rent, $420 per annum. Heating by lessors; lighting by lessee, cleaning by lessee, excepting the halls.

Ottawa.—Four story brick building northeast corner of O'Connor and Queen streets. Lessor, James Edward Hanna. Used for Finance, Labour and Militia and Defence. Lease expires September 11, 1914. Lessee has option to renew for five years. Rent, $16,095.73 per annum—23,470 feet at 68·58 cents per sup. foot=$16,095.73. Heating and lighting by lessee. Lessor provides elevator. Elevator and janitor services by lessee.

Ottawa.—Privilege of continuing projection on southeast corner of Langevin block. Lessor, Executors and trustees of Samuel Howell. Lease expires April 25, 1919, renewable at expiry of each 21 years for further 21 years. Rent, $600 of a cash payment and $5 per annum.

Ottawa.—Canadian building, 12 and 14 Slater street, Ottawa, excepting that portion or appartment now occupied by the lessor as an office. Militia building, 26 and 28 Slater street; Queen street building, 64 and 66 Queen street. Lessor, Imperial Realty Co., Limited. Lease expires May 1, 1916. Lessee entitled by giving notice in writing to the lessor not later than May 1, 1915, to renew for further five years from May 1, 1916 'upon and subject to the same terms, covenants and conditions as are contained in lease, except that the rental to be paid during renewed term shall be mutually agreed upon between the parties to lease.' Used for government offices. Rent, $78,468.94. Heating by lessor. Lighting and power by lessee.

Ottawa.—Second and third floors and part of lessor's building, Nos. 124, 126 and 128, south sied Queen street. Lessors—Original lessors, Frank J. Jarman and Geo. Hall Popham, subsequently sold to J. L. Rochester *et al,* in July, 1911. Used for Interior Department offices. Lease expires June 15, 1915, with option of renewal for a like or lesser period. Rent, $6,200 per annum. Heating by lessors.

Ottawa.—Portion of ground floor of lessor's building, comprising an area of 2,796 sup. feet, corner of Lyon and Albert streets. Lessor, Edwin Dickson Ker. Lease expires January 5, 1914, with option to renew for like or shorter period on same terms. Used for Mr. Lynch, Patent Records store. Rent, $900 per annum. Heating by lessor; lighting by lessee.

Ottawa.—Nos. 317, 319 and 321 Queen street, together with the new building thereto annexed. Lessors, J. B. & W. A. Lamb. Lease expires June 1, 1916. Used for analyst and testing departments, Inland Revenue. Rent, $2,660 per annum. Heating by lessors.

Ottawa.—Third and fourth floors of McNeil-Stewart building, 198 and 200 Queen street. Lessors, E. R. McNeil and R. G. Stewart. Lease expires September 5, 1916. Used for additional accommodation for Auditor General. Rent, $1,850 per annum. Heating by lessors; elevator service by lessors.

Ottawa.—Mills building, Slater street. Lessors, A. K. Mills & Son. No lease; authorized by chief architect April 12, 1911. Used for storage accommodation. Rent, $573.30—3,185 sup. feet at 18 cents.

Ottawa.—Basement, first and second flats, No. 14 west side Metcalfe street, Molsons Bank Chambers. Lessors, Molsons Bank. Lease expires November 30, 1913. Used for Conservation Commission and Marine and Fisheries. Rent, $2,340 per annum. Heating by lessors. Power by lessors (elevator and attendant).

Ottawa.—Land and premises west half of lot No. 19 on south side of Wellington street—subject to existing right of way—8 feet wide. Lessor, Ottawa Building Co., Ltd. Lease expires June 1, 1915, with option of renewal for five years more at $2,500 a year. Used for Interior Department. Rent, August 1, 1909, to June 1, 1910, at $1,600 a year, and for five years thereafter at $1,840 per annum.

Ottawa.—Three story brick building, 98 and 100 south side Wellington street. Lessors, Ottawa Building Co., Ltd. Lease expires May 15, 1911. Used for Justice Department. Rent, $1,500 per annum.

Ottawa.—Premises northeast corned Metcalfe and Slater streets. Lessors Ottawa Building Co., Ltd. Lease expired May 1, 1911. Used for Interior Department. Rent, $3,000 per annum. Heating and lighting by lessee.

Ottawa.—Stone building corner Queen and Metcalfe streets, Nos. 94 and 96, also yard. Lessors, Ottawa Investment Co., Ltd. Lease expired August 1, 1904. Used for Exhibition Branch Agriculture Department. Rent $1,000 per annum.

Ottawa.—Second, third and fourth floors of new Central Station building. Lessors, Ottawa Terminals Railway Co. (authority to pay rent to G.T. Ry System). Lease expires November 1, 1916, with option to renew for five years or less under terms to be agreed upon between lessor and lessee. Used for Board of Railway Commissioners. Rent, $19,500 per annum. Heating by lessors. Lighting by lesseses.

Ottawa.—Basement, ground floor and first floors, brick building known as the Imperial building, south side Queen street, No. 138 (excepting that portion of basement used for heating plant and coal storage). Lessor, Eliza Ann Pearson. Lease expires January 1, 1914, with option to renew for two years or less at same terms. Used by Interior Department. Rent, $5,400 per annum. Heating by lessor. Lighting by lessee.

Ottawa.—Premises corner Sparks and O'Connor streets (155 Sparks street and yard). Lessor, James Arthur Seybold. Lease expires May 1, 1913, with option to renew for five years on terms to be fixed by Minister of Public Works. When lease expires a sum equal to one-half of cost of elevator to be paid by Mr. Seybold; that is one-half of $3,262.45, which equals $1,631.22. Used for Customs, &c. Rent, $6,500 per annum. Elevator to be operated by lessee.

Ottawa.—Lot No. 11 south side Wellington. Lessor Slater Estate; no lease; see letter James Clark, agent Slater estate, offering lot at $30 a month on file 3244-2. Rent at this rate has been paid since June, 1899. Used by Public Works Department. Rent, $30 a month.

Ottawa.—Rooms 16-41 and 49 Sparks chambers, 193 Sparks street. Lessors, Slater and Sherwood. No lease; authorized by chief architect April 1, 1908. Used for Mines Branch. Rent, $45 a month. Heating by lessor; elevator service by lessor; lighting by lessee.

Ottawa.—Room on second floor southeast corner Sparks chambers. Lessors, Slater and Sherwood. No lease; authorized by chief architect May 27, 1910. Used for additional room for Mines Branch. Rent, $13 a month.

Ottawa.—Room 9 Sparks chambers. Lessors, Slater and Sherwood. No lease; authorized by chief engineer, December 6, 1910. Used for Mines Branch. Rent, $20 a month.

Ottawa.—Room 17, Sparks chambers. Lessors, Slater and Sherwood. No lease; authorized by chif architect September 29, 1911. Used for Mines Branch. Rent, $7 a month.

Ottawa.—Stone building south side Wellington street, No. 172 and yard, also the addition in rear two stories high and basement, including the adjoining half lot with stable thereon. Lessors, Robert Nicholas Slater and Esther Alberta Sherwood. Lease expired March 15, 1910. Used by Northwest Mounted Police. Rent, $1,140 per annum.

Ottawa.—Part of Corry building, south side Rideau street, comprising fourth, fifth and sixth flats and part of basement. Lessor, Edith Taylor. Lease expires May 1, 1914. Used for government offices. Rent, $10,200 per annum. Heating by lessor lighting by lessee.

Ottawa.—Second and third flats of Thistle building, No. 26 Wellington street Lessors, Thistle estate. Lease expired May 1, 1911, and building surrendered to lessors on April 30, 1912. Rent $1,100 per annum. Heating by lessors.

Prince Albert, Sask.—Site immigration building, northerly 33 feet of lots 15, 16, 17, 18 in block J, river lot 79. Lessors, Canadian Northern Railway Co. Lease expires June 1, 1914. Rent, $120 per annum.

Quebec.—Two rooms, 23 and 24 in fourth story of Banque d'Hochelaga building. Lessors, Banque d'Hochelaga. Used for agent of colonization. Lease expired April 30, 1912; surrendered to lessor at expiry of lease (and Superintendent of Immigration notifies Department of Public Works that they have taken offices for colonization agent at 101 St. John street, Quebec, at $450 per annum). Rent, $350. Heating and lighting by lessor.

Quebec.—Brick house and grounds, part of lot No. 2431 upon the Cadastral plan for the parish of St. Saveur, Que. Lessosr, John Jack, of Little River. Lease expires May 1, 1918. Used for house for medical superintendent Quebec immigration hospital. Rent, $600 per annum.

Quebec.—Seven rooms in Richelieu building, 46 Dalhousie street, Quebec, with two vaults. Lessor, Richelieu & Ontario Navigation Co. Lease expired April 30, 1910. Used for Inland Revenue. Rent, $270 every three months.

Revelstoke.—Quarters for Crown Timber office. Lessor, R. J. Law, Kootenay Agencies, Ltd., agents for property. No lease; chief architect authorizes, November 26, 1910. Rent, $20 a month and $10 a month for caretaker.

Ridgetown, Ont.—Portion of municipal building. Lessor, Town of Ridgetown. Lease expires December 1, 1915. Used for post office. Rent, $525, of which $300 is paid by government, and $225 by postmaster. Heating and lighting by postmaster at a cost not exceeding $150 per annum.

St. Anne de Bellevue.—Room in municipal building, with use of shed for storage of wook and coal. Lessors, Municipality of St. Anne de Bellevue. Lease expires June 1, 1912, with option of renewal for similar period at same rent and terms. Used for post office. Rent $150 per annum. Heating and lighting by lessee.

St. Felix de Valois.—Room space, 12 by 18 feet. Lessor, Ovide Pelletier. Lease expires September 10, 1912, renewable by mutual consent from year to year on same terms on three months' notice by lessor or lessee before expiration of lease. Used for post office. Rent, $100 per annum—$38 to be paid by postmaster and $62 by government. Heating, lighting, cleaning and removal of snow from roof by postmaster.

St. Gabriel de Brandon, P.Q.—Brick house. Lessor, Paul Farley. Lease expires October 1, 1912, when building surrendered to lessor. Used for post office. Rent, $200 per annum. Heating and lighting by lessee.

St. John, N.B.—Six offices, upper flat Bank of Commerce building. Lessors, Canadian Bank of Commerce. Lease expires May 1, 1913, with option to renew for three years at rental to be agreed upon and upon three months' notice. Used for offices—engineers—Public Works Department. Rent, $950 per annum. Heating by lessors.

St. John, N.B.—Site for construction of a shelter at Sand Point for the ship labourers. Lessors, City of St. John. Lease expires January 1, 1918, renewable for other seven years; special clause in lease, 'should the lessor refuse to renew these premises then it binds itself to pay the lessee the sum spent for improvements. Rent, two cents per annum.

St. John, N.B.—Ground rents (custom house) lots 22-28 and 24-33, Duke's ward. Lessors, City of St. John, N.B. Rent, $22 a year.

St. John, N.B.—Second story of warehouse No. 4, Wharf and Ramp. Lessors, City of St. John, N.B. Lease expires December 31, 1914. Used for immigration landing at St. John. Rent, $2,105.32.

St. John, N.B.—Martello Hotel property. Lessors, G. F. Brannen, Jane Brannen, C. H. Brannen, Margaret Brannén and Chas. W. Brannen. Used for extra hospital, &c., immigration. Lease expires January 1, 1913, but building purchased by government in August, 1911. Rent, $1,672.50.

St. Leonards, N.B.—Room in hotel. Lessor, Nap. Cyr. No lease; authorized by Deputy Minister, March 11, 1911. Used for office immigration inspector. Rent, $7 a month.

St. Saveur, P.Q.—Premises 838 St. Valier, St. Saveur. Lessor, Cleophas Turcotte. Lease expires April 30, 1916. Used for post office. Rent, $720 per annum. Heating and lighting by lessor.

St. Stephen.—Two rooms in building corner of King and Water streets. Lessor, John D. Chipman. Lease expires August 13, 1916. Used for immigration office. Rent, $150 per annum.

Saskatoon.—Basement of Masonic Temple building. Lessors, Saskatoon Masonic Temple Co., Ltd. Lease expires June 11, 1915. Used for Dominion Lands office. Rent, $1,800 per annum. Heating by lessors.

Sedgwick, Alta.—Lot 13, block 2 in townsite of Sedgwick and all buildings on same. Lessor, James S. McDonald. Lease expires October 22, 1912. Used for immigration. Rent, $25 a month.

Stettler, Alta.—Building owned by J. B. Griffith. Lessor, J. B. Griffith. Lease expires June 15, 1912. Used for immigration purposes. Rent, $20 a month.

Strathcona, Alta.—Immigration office. Lessors, Osler, Hammond & Nanton, agents Calgary and Edmonton Townsites, Winnipeg. No lease; rented by Interior Department June 16, 1892, from month to month. Used for immigration office. Rent, $12 per month.

Swift Current, Sask.—North portion of second story Argue & Cooper block. Lessors, Argue and Cooper. Lease expired April 1, 1912. Used for lands office, which mived to immigration building, March 25, 1912. Rent, $1,080 per annum. Heating by lessors.

Swift Current, Sask.—Site for immigration hall. Lessors, Canadian Pacific Railway. Lease expired August 1, 1911, and thereafter from year to year Lessor may terminate on one month's notice. Rent, $1 per annum.

Toronto.—Premises at 758 Queen street. Lessor, Miss M. Barrett. Used for post office, Station G, (Riverside). No lease; arrangement by letter, January 29, 1909. Term expires Mry 1, 1914. Rent, $80 per month. Heating by lessor.

Toronto.—Premises southwest corner Front and Lorne streets. Lessors, Grand Trunk Railway. Used for post office, Station A. Lease May 1 to May 31, 1906, and thereafter from month to month. Rent, $200 a month.

Toronto.—Additional space in Union station building. Lesssor, Grand Trunk Railway. Used for post office A—storing, sorting and forwarding mails. Lease from month to month. Rent, $100 a month. Heating and lighting by lessor.

Toronto.—Premises in Union station, Front street, with use of lavatories. Lessors, Grand Trunk Railway. Used for immigration purposes. Lease expired January 1, 1909. Lessors have right terminate lease at any time on one month's written notice. Rent, $1,000 per annum. Heating and lighting by lessors.

Toronto.—Part of McKinnon building, southwest corner Jordan and Melinda streets, Toronto. Rooms 107 and 110, first floor. Lessors, Sidney F. McKinnon. Used for Steamboat Inspector. Lease expires July 1, 1915. Rent, $720 per annum. Heating by lessor. Caretaking by lessor.

Toronto.—Ground floor and basement, southwest corner Bloor and Markham streets. Lessor, Alex. Mullin. Used for post office, Station E. Lease expires August 1, 1916, with option to renew for three years on same terms. Rent, $1,440 per annum. Heating by lessor.

Toronto.—Portion of premises known at Rosin House block, store No. 121 King street west and basement. Lessors, Rosin House Hotel Co. Used for post office, Station B. Lease expires August 8, 1915. Rent, $1,800 per annum. Heating by lessors.

Toronto.—Garage in rear of 66 Bond street, including brick stable and yard. Lessor, Mrs. Annie Warnica. Used for garage. Lease expires December 1, 1912, with option of renewing for three years—3 months' notice before leaving. Rent, $500 per annum. Lighting by lessees.

Trois Pistoles.—Portion of ground floor, town hall building. Lessors, Town of Trois Pistoles. Used for post office. Lease expired October 1, 1911, with option of renewal for similar period or periods. Rent, $100 per annum. Heating by postmistress. Lighting by postmistress.

Unity, Sask.—Lots 27, 28 and 29, block 6 in townsite of Unity. Lessors, Grand Trunk Pacific Development Co., Ltd. Used for site. Lease expires April 1, 1931, with option to renew for 21 years at same rental. Rent, $1 per annum.

Vancouver.—Three rooms, second floor, Chinese detention shed. Lessors, Canadian Pacific Railway. Used for immigration purposes. Lease expired January 1, 1911, and thereafter from year to year. Rent, $25 a month.

Vancouver.—Building 534 Howe street. Lesssor, C. E. Turner. Used for examining warehouse. No lease, but file 2447-2 shows arrangement as follows: Rent, during 1911, $225 per month; 1912, $250 per month; 1913, $275 per month; 1914, $300 per month; 1915, $325 per month. Heating by government.

Vegreville, Atla.—Building—34 by 48 feet—one room downstairs, and six rooms upstairs on lot 16, block 9. Lessor, Robert J. Lank. Used for immigration purposes. Lease expires, October 15, 1912. Rent, $40 per month.

Vermillion.—Part of lessor's station grounds. Lessor, Canadian Northern Railway Co. Used for site immigration hall. Lease, one month's notice to lessor or one month's notice from lessor. Rent, $1 per annum.

Victoria, B.C.—Three story building, corner of Langley and Broughton streets. Lessor, Alex. James Coholan McDermott. Used for examining warehouse. Lease expires January 1, 1915, with option to renew for two years at rental to be mutually agreed upon. Rent, $450 per month for year 1912, and $500 for next two years.

Victoriaville, P.Q.—Permission to lay drain and maintain same. Lessor, Grand Trunk Railway System. Lease expires; permission may be withdrawn at any time; date of lease June 4, 1900. Rent, $1 per annum.

Virden, Man.—Stone school building. Lessor, School District of Virden, No. 144. Used for immigration purposes. Lease expired March 15, 1912. Rent, $250 per annum.

Vonda, Sask.—Building in town of Vonda. Lessor, J. H. Currie. Used for immigration purposes. Lease expires April 1, 1912. Rent, $20 a month.

Westmount, P.Q.—Tenement, corner of St. Catherine and Green streets. Lessor, Mrs. Catherine McCall. Used for letter carriers, &c. Lease expired December 14, 1910. Rent, $1,200 per annum. Heating, cleaning and lighting by lessor.

Wilkie, Sask.—Site for immigration hall. Lessor, Canadian Pacific Railway. Rent, $1 per annum. No lease; authorized by chief architect, February 27, 1911.

Windsor, Ont.—Part of second floor lessor's building, southeast corner Ouelette avenue and London streets. Lessor, John Curry. Used for District Engineer, Public Works Department. Lease expires October 2, 1914. Rent, $720 a year. Heating by lessor.

Winnipeg, Man.—Extra room in Bawlf building. Lessor, N. Bawlf. Used for Indian Department. No lease; authorized by chief architect, April 29, 1912. Rent, $35 a month.

Winnipeg, Man.—Office in Chamber of Commerce building. Lessor, N. Bawlf. Used for hydrographic engineer. No lease; authorized by chief architect, June 17, 1912. Rent, $75 a month.

Winnipeg, Man.—Two rooms Chamber of Commerce. Lessor, N. Bawlf. Used for Weights and Measures and Gas and Electricity Branches. No lease; authorized by chief architect, May 2, 1911. Rent, $105 a month.

Winnipeg, Man.—Rooms in old Grain Exchange building. Lessor, N. Bawlf. Used for Indian Affairs. No lease; authorized by chief architect, February 22, 1910. Rent, $90 a month. Heating by lessor.

Winnipeg, Man.—Room in station and hotel building. Lessors, Canadian Pacific Railway. Used for post office, Station A. Lease expires October 1, 1915, but if lessors want to enlarge or alter station, they may terminate lease by giving lessee one month's notice. Rent, $2,050 per annum.

Winnipeg, Man.—Two rooms in Traders Bank Building. Lessor, Traders Bank of Canada. Used for Railway Commission. No lease; authority to lease one room, January 24, 1908, and authority to lease the other May 22, 1911. Rent, $55 a month.

INDEX TO NAMES OF LESSORS.

Names.	*Places where Building, &c., rented.*
Allan, A.	Calgary.
Allan, W. A. and Sanford Fleming	Ottawa.
Argue & Cooper	Swift Current.
Bagnall, Mrs. T. B.	Charlottetown.
Bank of Nova Scotia	Hamilton.
Barrett, Miss M.	Toronto.
Bate, Sir H. N.	Ottawa.
Bate & Sons, Ltd., H. N.	"
Battleford, Town of	Battleford.
Bawlf, N.	Winnipeg.
Birks & Sons, Henry	Ottawa.
Blackburn, R.	"
Blackburn, R. L. & R.	"
Blenheim, Town of	Blenheim.
Borget, A. J.	Humboldt.
Brannen, G. T., and others	St. John, N.B.
Brennan, J. C.	Ottawa.
Brown, Albert E.	Montreal.
Canadian Bank of Commerce	St. John, N.B.
Canadian Northern Railway Company	Edmonton.
" "	North Battleford.
" "	Ottawa.
" "	Vermillion.
Canadian Pacific Railway	Calgary.
" "	Montreal.
" "	Kerrobert.
" "	North Portal.
" "	Swift Current.
" "	Vancouver.
" "	Wilkie.
" "	Winnipeg.
Carrier, Ovide	Black Lake.
Chatelaine, Alexandre	L'Orignal.
Chipman, John D.	St. Stephen.
Clair, J. L.	Clair.
Clark, E. W.	Ottawa.
Clement Bros.	Brandon.
Costello, E.	Calgary.
Currie, J. H.	Vonda.
Curry, John	Windsor, Ont.
Cyr, Nap.	St. Leonards.
Delorme, Simeon Estate	Montreal.
Dominion Coal Co.	Glace Bay.
Dube, Victoria	Ottawa.
Duford & Charleton	"
Edmonton Board of Trade	Edmonton.
Edwards, Frederick	North Battleford.
Egan Estate Co., Ltd.	Ottawa.
Ethier, Leandre Jos.	Montreal.
Farley, Paul	St. Gabriel de Brandon.
Fleming, Thos.	Ottawa.
Fletcher, J. & A. S. McLean	Grand Prairie.
Financier & Artistique Co., Ltd.	Asbestos.
Gagnon, Isaac	Athabaska.
Geldersleeve Estate	Kingston.
Graham Bros.	Ottawa.
Gravel & Gravel	Moosejaw.
Grayson, Wm.	"
Great Western Telegraph Co.	Ottawa.
Griffith, J. B.	Stettler.
Grand Trunk Railway	Toronto.
Grand Trunk Pacific Development Co., Ltd.	Unity.
Grand Trunk Railway	Victoriaville.

Hannah, J. E.....Ottawa.
Herchemer, Committee, of person and estate..Kingston.
Higginbotham, John David.....Lethbridge.
Hochelaga Bank .....Quebec.
Hopking, Edward N.....Moosejaw.
Howell, Samuel, executors of.....Ottawa.
Hull & Co., W. R.....Lethbridge.

Imperial Realty Co.....Ottawa.
Irvine, J. A.....Calgary.
Irvine School District No. 892.....Irvine.

Jack, John .....Quebec (Little River).
Jarman & Popham .....Ottawa.

Keith, J. C.....North Vancouver.
Kelly, John .....Edmonton.
Ker, E. D.....Ottawa.

Lamb, J. B. & W. A.....Ottawa.
Lank, Robert J.....Vegreville.
Law, R. J.....Revelstoke.

Merchants Bank of Canada .....Montreal.
Mills & Son, A. K.....Ottawa.
Molsons Bank ..... "
Montreal, City of .....Montreal.
Moosejaw, City of .....Moosejaw.
Mullin, Alex.....Toronto.
Munro, L.....Hamilton.

McCall, Cath.....Westmount.
McCormack, Jas. E.....Grand Falls.
McDermott, A. J. C.....Victoria.
McDonald, James S.....Sedgewick.
McDougall, Annie .....Calgary.
McKinnon, Sidney F.....Toronto.
McLeod, M. J.....Moosejaw.
McNeill, E. R., and R. G. Stewart.....Ottawa.

Nichols, Geo. E. E.....Digby.
North Sydney, Trustees of Y.M.C.A.....North Sydney.

Ormsby, A. W.....Edmonton.
Osler, Hammond & Nanton.....Strathcona.
Osment, Arthur J.....Indian Head.
Ottawa Building Co.....Ottawa.
Ottawa Investment Co..... "
Ottawa Terminals Railway Company ..... "

Pearson, Eliza Ann .....Ottawa.
Pelletier, Ovide .....St. Felix de Valois.
Pennington, J. D.....Dundas.
Perley, Geo. H.....Ottawa.
Polley, Thos. J.....Kingston.

Richelieu & Ontario Navigation Company.....Quebec.
Ridgetown, Town of.....Ridgetown.
Rochester, John L.....Ottawa.
Rodier Estate .....Montreal.
Rossin House Hotel Co.....Toronto.
Ross, W. LeBreton .....Entwhistle.

Saskatoon Masonic Temple Co.....Saskatoon.
Seminaire St. Suspice.....Montreal.
Seybold, James Arthur .....Ottawa.
Slater Estate ..... "
Slater, Robert Nicholas ..... "
Slater and Sherwood..... "
Sutherland Realty Co.....Calgary.
Swales, Mrs. Clara Jane.....Hamilton.
St. Anne de Bellevue, Mun. of.....St. Anne de Bellevue.
St. Cunegonde, Town of.....Montreal.
St. John, N.B., City of.....St. John, N.B.

Taylor, Edith	Ottawa.
Thibeault, C. E.	Montreal.
Thistle Estate	Ottawa.
Thomas, R. C.	Calgary.
Thomas & Co., R. C.	"
Thompkins, Peter C.	Grouard.
Traders Bank of Canada	Winnipeg.
Trois Pistoles, Town of	Trois Pistoles.
Turcotte, Cleophas	St. Sauveur.
Turner, C. E.	Vancouver.
Virden School District No. 144	Virden.
Warnica, Annie	Toronto.
Weibe, John F.	Herbert.

PART IV

CHIEF ENGINEER'S REPORT

ON

HARBOUR AND RIVER WORKS

INCLUSIVE OF

GRAVING DOCKS AND DREDGING OPERATIONS

ALSO

ROADS, BRIDGES AND SURVEYS THROUGHOUT THE DOMINION.

REPORT OF THE CHIEF ENGINEER

DEPARTMENT OF PUBLIC WORKS OF CANADA,
CHIEF ENGINEER'S OFFICE,
OTTAWA, August 8, 1912.

R. C. DESROCHERS, ESQ.,
Secretary,
Department of Public Works.

SIR,—I have the honour to submit the annual report on the various works under my charge during the fiscal year ended March 31, 1912.

These works comprise the construction and repair of wharfs, piers, breakwaters, dams, weirs, bank and beach protection works; the improvement of harbours and rivers by dredging; the construction, maintenance and operation of government dredging plant; the construction and maintenance of graving docks; the construction, maintenance and working of slides and booms; the construction and maintenance of interprovincial bridges and approaches thereto, and of bridges on highways of federal importance in the Northwest Territories and the maintenance of military roads; also hydrographic and ordinary surveys and examinations, inclusive of precision levelling and geodetic measurements which are required for the preparation of plans, reports and estimates; the testing of cements, &c.

I have the honour to be, sir,
Your obedient servant,
EUG. D. LAFLEUR,
Chief Engineer.

PROVINCE OF NOVA SCOTIA.

ABBOT'S HARBOUR.

Abbot's Harbour, Yarmouth county, is a fishing settlement of a couple of hundred people, situated about 25 miles south-east from the town of Yarmouth, on the west side, and near the head of the peninsula forming the western side of Pubnico harbour. The little boat harbour is formed by a small island lying about 100 yards off the mainland. Its entrance to the south is protected by the island and the mainland, and the northern entrance by a shingle beach.

In order to deepen and enlarge the harbour, and improve the anchorage for fishing craft, the department in 1911-12 removed 28,660 cubic yards of sand, gravel, mud and boulders. Work, which was done by the departmental dredge *Canada*, was

begun on the 25th of July, 1911, and finished on the 9th of September, 1911. The dredged area is comprised within a length north and south of about 800 feet by a width of about 200 feet. The dredging was carried to a depth of 10 feet below L.W.O.S.T.

ALBERT BRIDGE.

Albert Bridge, Cape Breton county (South) is situated on the Mira river, about 5 miles from Mira Gut at its mouth, where there is a station of the Sydney and Louisburg railway, and is distant about 12 miles from the City of Sydney. Several small steamers are engaged in the passenger and freight traffic on this river, and passengers getting off at Albert Bridge are landed at an old pier out on the main river, where the landing is both difficult and dangerous.

The sum of $1,000 was voted for expenditure during 1911-12, for the construction of a native timber block and span wharf, 100 feet in length and extending to 11 feet at low water, in Burke's cove, near the bridge, and for which a free site and right of way have been offered to the department.

Instructions were received to proceed with the construction of the proposed wharf by days labour, but as plans and specifications for it had to be prepared, and as these could not be completed until late in the fall, when it was found too late to commence operations, no part of the amount voted was expended.

AMAGUADEES POND, CASTLE BAY.

Amaguadees pond (Castle bay), Cape Breton county (north), is on the northern side of East bay, the eastern arm of the Great Bras D'Or lake.

The works consist of a block and span wharf, 192 feet in length and 20 feet wide, and extending to 14 feet at low lake level, with a warehouse thereon, 10 by 16 feet, for the storing of goods shipped and landed by the ss. *Blue Hill,* which during the season, calls here fortnightly, and makes connections with the Intercolonial railway at Grand Narrows.

The department constructed also a bridge 100 feet long, including approach, and 20 feet wide across the outlet of the pond, and a road to connect the wharf with the public road, about half a mile in length.

During the last fiscal year, the sum of $208.32 was expended improving the grades and small bridges on this road.

AMHERST.

Amherst Harbour is situated at the head of Chignecto bay, near the mouth of the La Planche river, about 2½ miles from Amherst town. The town of Amherst is probably the most important, prosperous and thriving industrial town in the province of Nova Scotia. It is a manufacturing centre of considerable magnitude, and efficient water transportation would therefore greatly augment its future advancement. It has a population of about ten thousand people.

In the year 1904, a pile wharf was constructed at this place, which consists of a stem running from the dyke to the edge of the channel 249 feet in length, with a width of 36 feet, and the wharf proper, which begins at the outer end of this stem and runs seaward a distance of 300 feet along the inner edge of this channel. This wharf proper is 50 feet wide, and has a common height of 44 feet at its outer face, and 28 feet on its inner face.

In the fiscal year 1907-1908, another wharf was constructed, situated about 350 feet farther up stream than the old work. This second pier is 360 feet in length, 64 feet wide and has a height from its outer face of 28 feet. It is constructed of pile trestle bents, separate 8 feet apart, whilst the piles in these bents are distant from each

other 7½ feet, measured between centres. The front of this work and the ends are close piled, whilst pier number one is sheathed with 4-inch sheathing, and double fendered.

During the last fiscal year, no work was done upon the repairs which consist in the replacing of 26 bearing piles, 60 fender piles, 42 braces, 5,000 feet B.M. 5-inch plank. In order to do this, the wharf will have to be stripped, which will also add considerable to the expense.

Tides rise here, spring 40 feet, neap 33 feet.

ANDERSON'S COVE.

Anderson's cove, Annapolis county, is a very slight indentation in the coast line, on the south side of the Bay of Fundy, 16 miles east of Digby Gut, 2 miles east of Litchfield and 5 miles west of Parker's cove. The settlement, which is called Hillsburn, comprises, within the radius of a mile, about 150 people, dependent almost exclusively on the fisheries for a living.

In order to afford some measure of protection and shelter for the boats, which were often broken or destroyed for lack of shelter, the department in 1905-06 expended the sum of $1,813.29 in constructing a small breakwater, 162 feet long, from 7 to 13 feet high, and 26 feet wide. In 1906-07, the sum of $1,000 was expended in extending the work by a substantial block of cribwork, 50 feet long, 26 feet wide and from 12 to 15 feet high.

In 1908-09, the sum of $2,998.57 was expended in extending the breakwater a further length of 100 feet, but owing to the lateness of the season at which the work was begun, September 19, 1909, and closed down on account of stormy weather, November 30, 1909, it was not completed within the fiscal year.

In 1909-10, the sum of $999.97 was expended in completing it. The extension is 100 feet long, 26 feet wide and from 15 to 18 feet high, substantially built of round log cribwork, filled with ballast.

Spring tides rise about 28 feet.

In 1911-12, the sum of $3,498.36 was expended: $1,885.54 in the construction of an extension to the breakwater, the new block being 42 feet long, 28 feet wide and 12 feet high, of substantial cribwork. Work began August 25, and suspended December 14, 1911.

The expenditure in the month of March ($1,612.32), of which $200 went to secure the new block from further damage during the winter, and the balance for the purchase of timber for the further extension of the work.

ANNAPOLIS ROYAL.

Annapolis Royal, Annapolis county, is the oldest town in the Province of Nova Scotia, having been founded in 1605. It is beautifully situated at the head of Annapolis Basin and on the south side of Annapolis river. It has a population of about 2,000, and is in the centre of one of the most fertile districts of Nova Scotia.

In 1905-08, the department expended $9,346.22 in building a landing pier on the site of a very ancient one. (For particulars see Annual Report, 1909-10).

Ice-Piers.

In 1910-11 the sum of $676.31 was expended in days labour in sheathing, with six-inch birch, and in corner plating with half-inch iron, the upper ten feet in height of the cribwork base of pier No. 3, as a protection against floating ice.

A contract for the construction of the next two piers, Nos. 4 and 5, was awarded in March, 1911, to E. R. Reid, for the sum of $37,300.

Work was begun on the 26th of May, and closed for the season on the 12th of December, 1911, at which latter date both cribs, Nos. 4 and 5, were in place, fully ballasted and riprapped around their bases. The value of work done at the close of the season was $20,040, on contract, and $1,050 extra for 600 tons of additional riprap.

The expenditure for the fiscal year 1911-12 was $19,737.29.

ARGYLE SOUND.

Argyle Sound, Yarmouth county, is situated on the west side of the head of the peninsula forming the western side of Pubnico harbour, some 30 miles southeast of Yarmouth, the county town.

In 1900-01, the sum of $500 was expended in constructing a small wharf on the site of an old one. The new work consists of a block of substantially built crib-work, 28 feet long, 11 feet wide, 6 feet high, well fendered, floored and ballasted. An approach was also built of granite boulders covered with gravel, 70 feet long, 25 to 28 feet wide, and from 3 to 8 feet high.

In 1901-02, the department expended the sum of $519.67 in extending the little wharf built the previous year. The extension consists of two blocks of round log crib-work, stone filled, 28 feet long, 11 feet wide in the length of the wharf, by 8 to 10 feet high. The blocks are connected to the shore block, with spans of 14 feet. The work as now completed, consists of three blocks of cribwork, each 28 feet long, across the wharf, by 11 feet wide and 8 to 11 feet high.

Spring tides rise 12 feet, neaps 10 feet.

In 1911-12, the sum of $291.63 was expended in repairs and renewals to the top of the wharf.

ARICHAT.

Arichat, the shiretown of Richmond county, is situated on the northern shore of Arichat harbour, on the southern side of Madame island.

The harbour, which is spacious, is well sheltered by outlying islands, and has two entrances, of which the western, although only about 600 feet in width, is the easiest to make; the southern entrance is about 1,800 feet wide, but it lies between shoals.

On July 13, 1910, a contract was entered into for the construction of a wharf and warehouse thereon, for the sum of $16,176. The work of construction was commenced on September 23, 1910, and continued until November 15, following, when work was suspended for the season.

Operations were resumed on May 3, 1911, and continued until September 8, following, when the work under contract was satisfactorily completed.

The work consists of a stone approach 131 feet in length and 30 feet wide; of a block and span wharf, 144 feet in length and 30 feet wide; with an 'L,' also consisting of block and span work, 90 feet long and 50 feet wide, and of a warehouse 80 feet long and 25 feet wide, placed on the 'L.' The channel face of the wharf has a length of 120 feet, with a depth of 19 feet at low water, and the blocks which consist of round timber cribwork, have creosoted timber substructures.

Spring tides rise 5 feet; neaps 4 feet.

The expenditure for the fiscal year 1911-12, was $6,894.41.

ARISAIG.

Arisaig, Antigonish county, is on the south-eastern shore of Northumberland strait, about 15 miles south-east from Cape George.

The works include a pier on the northern and a breakwater on the southern side of a small cove.

The pier, commenced by the provincial government prior to confederation, and extended and improved by the department, is 544 feet in length, including an approach 272 feet in length (of which the inner 117 feet is of brush and stone and the outer 155 feet of stone with stone retaining walls), protected on both sides by a stone talus, and a crib-work extension, 272 feet in length and from 40 to 44 feet in width, strengthened and protected on the seaward side by a 24 by 24-foot cribwork block at the outer end, and by quarried stone sloping 3 to 1, from high water level.

In 1910-11, the sum of $4,786.02 was expended in repairing about 60 feet of the roadway and about 80 feet of the seaward face of the wharf; also in reballasting and repairing the 'L' at outer end of work and in procuring all the creosoted timber and part of the ballast and native timber for a proposed extension which is to be 57 feet by 20 feet in line of work, extending to 12 feet at L.W.S. with creosoted substructure to half tide, fully ballasted and sheathed on all faces with creosoted and hardwood sheathing.

During the fiscal year 1911-12, the sum of $415.32 was expended in paying balance due on creosoted timber and in procuring the balance of materials required for the proposed extension, while the expenditure on dredging amounted to $2,387.86.

Dredging.

During part of the season of 1911, May 28, to August 12, the dredge *George McKenzie* was engaged in deepening the ledge rock on the south-eastern side and at the outer end of the public wharf. The area dredged over was 400 feet in length and 150 feet in average width. The depth obtained at extreme low water varied from 10½ feet, 200 feet out from the outer end of the wharf, to 7½ feet at the outer end and 1½ feet, 200 feet in from the outer end. The quantity of material (sand, gravel and a small percentage of stone loosened from the ledge rock bottom) removed was 4,940 cubic yards, measured in place, or 5,519 cubic yards, scow measurement.

ASPY BAY.

Aspy Bay, Victoria county, is situated on the north-eastern coast of the northern end of Cape Breton island, and is about 8 miles wide and 4 miles deep.

The sum of $50,000 was voted for expenditure during 1911-12, towards the cutting of a channel through the beach separating the North Harbour at Dingwall from the bay, and for constructing channel protection works for the purpose of forming a harbour of refuge.

Plans and specification for the cutting of the channel to a depth of 12 feet below low water and for the construction of channel protection piers, were submitted on August 25, 1911, but tenders for the proposed work were not called, because the plans were intended for a channel from 12 to 16 feet in depth at low water, and it was deemed advisable to build the protection works in such a manner as to permit of the channel between them to be dredged to 20 feet in the future.

Amended plans and specifications for the proposed work were subsequently prepared and submitted to the department on December 6, 1911, and the estimated cost of works proposed was placed at $160,000, but tenders for its construction were not called.

BADDECK.

Baddeck, the shiretown of Victoria county, is on the northern shore of the Little Bras d'Or lake, near the entrance to St. Patrick's channel.

During 1907-08, a wharf, 284 feet in length and extending to 18 feet at low lake level, was constructed by the department. It consists of a road approach 64 feet in

length and 30 feet in width, of cribwork with creosoted timber substructure, 50 feet long and 48 feet wide; with two landing stages, respectively 32 and 64 feet in length and 8 feet wide, one on either side of the inner end of the wharf and built on creosoted timber pile foundations.

The top of the wharf is 5 feet above the low level of the lake, which rises about 15 inches.

During 1908-09-10, the wharf property was fenced in, drained, raised and levelled; the old warehouse was repaired and fitted up for office, waiting room and baggage room; a new freight warehouse 48 by 34 feet was constructed on the inner end of the wharf, and a cribwork retaining wall on the harbour front of the property was partly built.

The sum of $450 was voted for expenditure during 1911-12, to complete the cribwork retaining wall commenced during 1909-10, and of the amount voted the sum of $446.50 was expended in its completion.

BADDECK RIVER.

The Baddeck river is a large stream in Victoria county, flowing through a rich agricultural district, and entering into the St. Patrick's channel, an arm of the Bras d'Or lake at a point about 5 miles to the westward of the town of Baddeck.

During 1907-08, a shear-dam, 150 feet long, 15 feet wide, and consisting of piles, brush and stone, was constructed off Ewen Nicholson's shore to divert the course of the river into an old and straighter channel, for the purpose of preventing damage during freshet to the low lying intervale lands to the westward of the shear-dam, and during 1908-09, the shear-dam was extended a distance of 30 feet by the construction of a cribwork block.

During the present year, the sum of $233.53 was expended in repairs to the dam and in placing a brush and stone dam across a gully on the western side of the outer end of the shear-dam to keep the river in the new channel.

The total expenditure on the work, up to March 31, 1912, is $1,923.95.

BASS RIVER.

Bass River, Colchester county, is a farming and manufacturing village of about 500 people situated on the north side of Cobequid Bay, the eastern arm of the Bay of Fundy. It is half way between Truro and Parrsboro, or about 28 miles from either place.

In 1894-95, the department built, by contract, at a cost of $3,240, a public wharf of pilework, 210 feet long, 40 feet wide with an ell at the outer end 55 feet long and 40 feet wide. At the outer end of the ell, it was found necessary to build a small block of cribwork, containing 8,000 cubic feet, on account of the hard nature of the bottom preventing piles from being driven to a proper depth. Along the outer face, the work is 25 feet high, giving a depth of 22 feet at H.W.O.S.T. In the fiscal year 1901-02, the department expended the sum of $1,099.11 in extending the pile work; the extension is 40 feet square, substantially built of pilework and giving the wharf the shape of the letter T. A small freight shed was also built on the wharf for the accommodation of shippers and merchants.

Since that date, various sums have been expended in repairs to the work and in the year 1911-12, the sum of $709.33 was expended in repairs and renewals to the stem of the wharf, the whole of the planking, guard timbers, stringers and some of the caps being renewed.

Work was begun August 10, completed September 25, 1911.

BATTERY POINT.

Battery Point, Annapolis county, is a fishing settlement of about 150 people, situated on the east side of Digby Gut, about 4 miles north-east from the town of Digby, and 15 miles south-west from the town of Annapolis.

This work is fully described at page 91, Part IV., of annual report for 1910-11.

In 1911-12, the sum of $2,809.97 was expended in the construction of a second breakwater a couple of hundred feet to the south of the existing work, for the purpose of affording a shelter from southerly weather. The new block, so far as it has gone, is 50 feet long, 22 feet wide, and from 15 to 20 feet high. Of the above sum, $1,665.50 was expended in building the block, in September, October and November, 1911, and $1,144.37 in the purchase of timber to finish and extend the new work.

BAY ST. LAWRENCE.

Bay St. Lawrence, Victoria county, is on the northern extremity of the island of Cape Breton.

At the head of the bay, and separated from it by a beach of sand and gravel, there is a small lake or pond, ¾ of a mile in length and half a mile in width, with a considerable depth of water.

During 1908-9, in order to render the pond accessible to fishing boats, for a harbour, a contract was entered into for the cutting of a channel through the beach to 2 feet below low water and 50 feet wide at the bottom, and the construction of channel protection piers on either side of the seaward entrance to the channel, each 290 feet in length and extending to 8 feet at low water and consisting of crib-work with creosoted timber substructure; of the work under contract, up to the end of that year, the piers were fully completed and about one-half of the proposed excavation of the channel was done.

On July 27, 1911, the contractors were notified to proceed immediately with the completion of their contract, which consisted in the excavation and dredging of the channel between the piers, to 2 feet below low water, but nothing was done at the time, and later it was found too late in the season to start the work.

BLACK POINT.

Black Point, Richmond county, is on the southern or Atlantic shore of the island of Cape Breton, about 15 miles to the eastward of the entrance to St. Peter's canal.

On November 26, 1910, a contract in the sum of $7,166 was entered into, with A. W. Gerroir and K. Sweet, of Antigonish, N.S., for the construction of a breakwater on the northern side of the point to protect the anchorage for fishing boats.

The work of construction was commenced on July 20, 1911, and was satisfactorily completed on November 11.

The breakwater is 378 feet in length and extends to 6 feet at low water. The inner end for a distance of 150 feet is 16 feet wide and the outer end, 24 feet wide. The work consists of a round timber crib-work structure with creosoted timber substructure, solidly ballasted and close sheathed on the seaward face and outer end.

Spring tides rise 4½ feet; neaps 3½.

The total expenditure amounted to $7,479.79.

BLUE ROCK.

Blue Rock, Antigonish county, is situated on the southern coast of St. George's bay, about 2½ miles to the eastward of the entrance to Tracadie harbour and 6 miles to the westward of the northern entrance to the Strait of Canso.

The work consists of a breakwater 316 feet in length and from 16½ to 17 feet in width, on top, with a sloping face on the seaward side of 1 to 1 from the top of the work to 1 foot below high water, and a stone slope 1½ to 1 from 1 foot below high water for a distance of 175 feet or to within 20 feet of the outer end.

During the fiscal year 1911-12, the sum of $249.62 was expended in replacing some covering and sheathing of the inner portion of the breakwater and in temporary repairs to the outer end.

Work was in progress September 16 to 30 and October 2 to 19.

BLUE ROCKS.

Blue Rocks, Lunenburg county, is a fishing settlement situated on Lunenburg bay, about 4 miles from Lunenburg. It has a population of 300, dependent upon the fishing industry for a living. The harbour, which is sheltered by a small rocky island, lying close to the shore, is much exposed to seas at both the eastern and western entrances.

During the year 1909-10, the sum of $4,144 was expended in the construction of a small crib-work breakwater between the mainland and the island, at its eastern extremity, thereby closing the eastern entrance and forming a snug harbour.

In the year 1911-12, the sum of $8,207.66 was expended in the construction of a breakwater to protect the western entrance of the harbour. The completed work is 220 feet long, 25 feet in width and from 10 to 18 feet in height. The work was done by contract.

Work was begun in June and completed October 31, 1911.

BREEN'S POND.

Breen's pond, Antigonish county, on the southern shore of St. George's bay, near the extremity of a headland to the westward of the northern entrance to the Strait of Canso, between Harbour Au Bouche and Little Tracadie, is known locally as Cape Jack.

A contract was entered into on August 8, for the construction of a breakwater from a point to the eastward of the pond for the sum of $13,000.

The proposed work is 435 feet in length and 20 feet in width, extending to 9½ feet at L.W.S. Spring tides rise 4½ feet. The substructure is to be of creosoted timber and the superstructure of native timber; the seaward and outer faces of the work are to be close-sheathed with 4-inch hardwood and creosoted sheathing, and the whole work covered with 4-inch spruce or hemlock plank.

Work of construction was commenced August 23 and suspended September 30.

The expenditure for the fiscal year 1911-12, is $720.70.

BRETON COVE.

Breton Cove, Victoria county, is on the northeastern shore of the island of Cape Breton, about midway of St. Ann's harbour and South Ingonish bay.

During 1904-5 a wharf was constructed to serve the purposes of a boat landing, and to afford shelter for fishing boats. It is a continuous crib-work structure, with creosoted timber sub-structure extending to 4 feet at low water, 195 feet in length and 16 feet wide, with an 'L' on the western side of the outer end, 24 by 20 feet.

As the gravel and shingle, composing the beach to the northeastward of the work, was making up along the eastern face, and threatened to go along its outer end, during 1908-9, the work was extended a distance of 120 feet, to 5 feet, at low water. The extension is constructed of round timber, creosoted to half-tide, and is 16 feet wide with an 'L' on the western side of the outer end, 24 by 20 feet.

During 1909-10, the old outlet of the pond inside of the beach, which emptied into the sea near the eastern side of the wharf and endangered its safety, was closed, and a new outlet was opened and protected on the eastern side of its mouth by a rough crib-work 125 feet long and 15 feet wide, and during the fiscal year ended

March 31, 1912, the sum of $246.53 was expended in repairing the channel protection work.

Spring tides rise 4 feet.

The construction of this work has proved of great benefit to the inhabitants of a large section of the country, both for landing purposes and as a shelter for fishing boats.

BROOKLYN.

Wharf.

Brooklyn, or Herring cove as it was formerly called, is situated on the eastern side of Liverpool harbour. Owing to the existence of a sand-bar and the contracting shape of the harbour, this cove has been the only safe anchorage in the bay, when properly protected. The village is a fishing and farming village, some lumbering being done as well, with a population of about 400. In the year 1899-1900, the department began the construction of a new wharf upon the site of an old wharf built by the provincial government prior to confederation. This structure consists of an approach or stone bank, 158 feet in length, of continuous crib-work, 32 feet wide on top, and 50 feet in length, likewise 32 feet wide on top, of pile trestle bents, the outside 32 feet of these pile trestle bents being 56 feet wide. Considerable shipping is done from this wharf, and during the last year, the sum of $750 was appropriated for the purpose of making repairs, of which amount the sum of $706.53 was expended. The work was commenced August 19 and was completed on December 11, 1911. The crib-work, for its top 4 feet, the stringers, guard-rails and planks were all renewed with the exception of a considerable portion of the floor timber which yet remains to be done, and for which the sum of $300 is being asked for out of the general vote.

Spring tides rise 7 feet, neap 4½ feet.

New Breakwater.

In the year 1879, the department constructed a breakwater, which cost in the vicinity of $70,000. This was constructed of crib-work, but owing to the presence of the teredo, the logs of the crib-work were eaten away and the entire structure became demolished, so that the old work is a menace to navigation and is no longer a protection. This harbour, or place of call, if proper protection were afforded, would be the only shelter for the vast amount of navigation on the Atlantic coast of Nova Scotia between the ports of Halifax and Shelburne and it is, therefore, not only of local but of national importance. During the past year, a contract was let to the Nova Scotia Construction Company, Limited, for the construction of a concrete breakwater. This contract was let on September 9, 1911; since that time this company assigned its contract to a firm known as Falconer & MacDonald, of Halifax. This deed of assignment was accepted by the Governor in Council on the 11th day of November, 1911, and was executed on the 19th day of December, 1911.

The proposed work is parallel to the north side of the old breakwater in Liverpool bay, and is about a mile distant, by waggon road, from Brooklyn station on the Halifax and Southwestern railway. The breakwater will consist of a shore approach 30 feet wide extending out 170 feet and a mass concrete structure for the outward part, 30 feet wide, said outward part being 480 feet in length. The approach will be formed by two parallel concrete retaining walls with vertical faces, filled between with hand-packed rubble. The filling will be covered with a load of concrete 2 feet thick deposited upon it and bonded with the fresh concrete of the side walls. The top will be finished throughout, at the seaward side, to a height of 5 feet above H.W.O.S.T. From the end of approach outwards, the breakwater will be concrete deposited under water and thickly studded with masses of stone. For about 130 feet the mass of

concrete will be founded on rock from which the overlying material will be excavated. Beyond, to the outward end, the foundation will be enclosed with wooden sheet piling and the concrete will be on the natural bottom thus enclosed. The top of the breakwater will be finished throughout 5 feet above H.W.O.S.T., as required for the approach. There will be nearly 30 feet of water at its outside end.

BRULE.

Brule, Colchester county, is situated on Northumberland strait about 20 miles in a straight line from the town of Pictou, and is an arm of Tatamagouche bay. The harbour is sheltered from the north-east by a long neck of land terminating in Cape John, on the north-west, and by Brule point. Surrounding the harbour is a prosperous country, well populated. The village of Brule has a post office and telephone, and the population is 500. The nearest railway station is Denmark on the Intercolonial railway. distant two miles.

The old wharf, constructed between 1884 and 1888, had a total length of 366 feet, a width of 24 feet and a height of 14 feet at the outer end.

During the year ending March 31, 1911, the sum of $1,948.85 was expended in extending the wharf. During the year 1911-12, the sum of $303.90 was expended in completing the close-piling of the new portion of the work.

Work was begun June 6, completed March 31, 1911.

BURKE'S HEAD.

Burke's Head, Victoria county, is on the northern side of the north bay of Ingonish, on the north-eastern coast of the island of Cape Breton.

Plan and specification for the construction of a breakwater were prepared and forwarded to the department for approval, and on January 9, 1911, a contract was entered into with Messrs. Gerroir and Sweet, in the sum of $35,490 for its construction.

The work under contract consists of a crib-work structure 390 feet in length, with a return or 'L' 120 feet in length, along the channel face, which is in 15 feet at low water; for a distance of 150 feet from the inner end it will be 20 feet wide, for a further distance of 120 feet, 24 feet wide, and for the remaining distance and for the 'L' it will be 30 feet wide on top. All faces of the work are to be built of squared timber, laid open-faced, with ties of round timber, creosoted to half tide, solidly filled with ballast, and the seaward face, the outer end, or channel face and the outer end of the 'L' are to be close-sheathed between the fenders. A heavy quarried stone talus sloping 3 to 1, is to be laid along the seaward face of the work, and a road 300 feet long and 20 feet wide is to be cut along the face of the bank, from the top of the bank to the inner end of the breakwater.

The work of construction was commenced early in June, 1911, and good progress was made until the early part of October, when the weather became stormy and the work was delayed.

On October 1 the substructure of the work was all in place, excepting the 'L', and was fully ballasted. The substructure of the 'L' was built afterwards and was ready to be placed, but during a terrific gale it was driven ashore and partly wrecked.

The work was continued until November 20 ult., when it was suspended for the winter and at that time the whole of the structure, excepting the 'L', was completed.

The expenditure for the fiscal year amounted to $17,180.33.

BURLINGTON.

Burlington, Hants county, with a population of 350, is a farming settlement, 5 miles north of the county town of Windsor, on the right bank of the mouth of Kennetcook river.

In the year 1901-2, the department expended the sum of $3,499.99 in the construction of a wharf for general purposes. In the year 1902-3, the sum of $1,590.79 was expended in completing the road approach and in building a small freight shed on the wharf.

In the year 1911-12, the sum of $330.19 was expended in the purchase of planking, &c., for much needed repairs to the top of the wharf.

CANADA CREEK.

Canada Creek, Kings county, also called Black Rock, is a fishing and farming village of about 150 people, on the south shore of the Bay of Fundy, 60 miles east of Digby gut, 9 miles northwest from Waterville station on the Dominion Atlantic railway, and 8 miles west of Hall's Harbour. The harbour is formed by two piers, or breakwaters, built on either side of a small stream. That on the east side which is detached from the shore, serves merely as a breakwater, and was built by the department in 1878-79, at a cost of $3,000. It is 150 feet long, 25 feet wide on top and from 12 to 15 feet high, substantially built of round-log cribwork, close-faced, well ballasted and fendered. The breakwater on the western side, originally 248 feet long, which serves both as a breakwater and landing pier, was built before confederation at the joint expense of the inhabitants and the provincial government. It is built of round log crib-work, the seaward side being protected by close sheathing of flatted spars.

In 1911-12, the sum of $618.72 was expended in close-sheathing the east side of the breakwater, and in repairs to its floor. Work begun on November 4, and finished on December 30, 1911.

CANNING.

Canning, Kings county, is a prosperous village of about 1,500 people, mostly engaged in farming and fruit raising, situated on the north bank of the Habitant river, which 2½ miles below bebouches in to the Basin of Minas. It is an important station on the Kingsport branch of the Dominion Atlantic railway, which connects with the main line at Kentville, 11 miles to the south.

The construction of a crib-work wharf was begun by the department in 1904-5, and completed in 1907. (Full details will be found in the departmental report for 1909-1910.)

In 1910-11, the sum of $1,999.75 was expended in continuing the construction of the down stream extension to the public wharf, begun in 1909-10. The work is 590 feet long, from 8 to 20 feet high, the upper or western half length 20 feet wide, and the lower or eastern half length 10 feet wide on top. The whole work is substantially built of crib-work and the bottom course of logs trenched into and bolted to the soft sandstone rock, on which the face of the work rests.

The expenditure not sufficing to complete the ballasting of the work, or the earth filling in its rear, a contract was awarded in the sum of $1,150 to finish it, which was accomplished by the end of November, 1910.

In 1911-12, the sum of $1,478.75 was expended in paying the amount of this contract and in gravelling the top of the wharf.

CAPE DAUPHIN.

Cape Dauphin proper, Victoria county, is a high and precipitous headland on the eastern coast of Cape Breton island, and is the dividing point between St. Ann's bay and the Great Bras D'Or channel, but the whole district for a distance of 4 miles

south of the cape is locally known as Cape Dauphin.

The sum of $8,700 was voted for expenditure during 1911-12, towards the construction of a breakwater at a point 1½ miles south from the cape to form a small boat harbour for fishermen.

Plan and specification for the proposed work, estimated to cost $10,500, were prepared and submitted to the department on September 8, but nothing further was done in the matter.

The proposed work consists of a continuous crib-work structure, with creosoted timber substructure, 320 feet long on its centre line, 16 feet wide for a distance of 170 feet and 20 feet wide for the remaining distance, and with a depth of water of 8½ feet at low water at its outer end.

CAPE ROUGE.

Cape Rouge, Inverness county, is a small fishing station on the Gulf of St. Lawrence, 8 miles to the northeastward of the northeastern entrance to Cheticamp harbour.

The sum of $14,000 was appropriated for 1911-12, for the construction of a breakwater to serve as a landing place and a shelter for boats. A plan and specification for the proposed work were forwarded on August 24, 1910.

A contract for its construction was entered into on August 30, ult., with Messrs. Robert and Bart Musgrave, of North Sydney, for the sum of $15,884.

The work under contract is 250 feet in length and 20 feet wide on top with a 'T' head, 20 feet in line of work, and 105 feet in length, and consists of continuous round timber crib-work with creosoted timber substructure. The depth of water on the channel face of the 'T' will be 7½ feet.

The necessary materials were procured during the winter, but the work of construction was not commenced by the end of the year ending March 31, 1912.

CARIBOU ISLAND.

Caribou Island, Pictou county, is on the Northumberland strait, 5 miles to the westward of the entrance of Pictou harbour.

A cause-way of brush and stone, 1,300 feet in length, between the western extremity of the island and the mainland, on flats dry at extreme low water, commenced in 1890-1, was after the completion of the works undertaken in 1904-5, up to the level of about one foot above extreme high water or seven feet above extreme low water, and had a talus of quarried stone on the seaward side, sloping one to one from high water.

The work was damaged and repaired from time to time between 1904-5 and 1908-9. At the beginning of the fiscal year 1909-10, it was in the following condition: the rising of the causeway and talus to a proposed height of 3 feet above extreme high water was nearly completed over a distance of 454 feet from the mainland; over a distance of 576 feet (454 to 1,030 feet from the mainland) it was raised to an average height of about 1½ feet above extreme high water, and the piles were driven in a proposed pile and brush work 555 feet in length, in bents 5 feet apart, centre to centre, with 3 piles in each bent, to protect the middle third of the causeway.

In 1909-10, $206.86 was expended in completing the pile and brush-work, including the replacing of 99 piles broken during a severe storm in January, 1909.

In 1910-11, the sum of $2,000 was expended in repairing the pile and brush-work and in raising the causeway which had settled to about 9 inches below high water, to 9 inches above high water.

During the fiscal year 1911-12, the sum of $967.91 was expended in replacing some brush (poles) in outer end of pile and brush-work and in raising and repairing the roadway.

Work was in progress August 1 to 19, September 22 to 30, October 2 to 7, and November 17 to 18.

CENTREVILLE.

Centreville is situated on Cape Sable island, about 2 miles southwest of North East Point, and is a calling place for a ferry service between Barrington passage and Cape Sable island. This calling place serves not only the interest of the people in the immediate vicinity but of the Stony Island section as well, so that in all about 800 people are served. For a number of years, this ferry stopped at a private wharf, known as McGray's wharf, which is now in such a state that its renewal or rebuilding is absolutely necessary. The appropriation for the construction of a wharf was $1,600, and during the past fiscal year the sum of $346.50 was expended for material for the work in question, but since that time a proposition for a different location which would suit a great many more people has come up and no work was done on the construction.

Tides rise: spring, 10 feet; neap, 5½ feet.

CHAPEL COVE.

Chapel Cove, Richmond county, is situated on the southern or Atlantic shore of the island of Cape Breton, between the southern entrance to the St. Peter's canal and Michaud point, being 6 miles southeast from the former and 4½ miles northwest from the latter, and forms the western end of the settlement of L'Ardoise.

Plan and specification for the construction of an isolated breakwater to protect the anchorage for fishing boats were prepared and forwarded to the department on September 19, 1910, and on February 15, 1911, a contract was entered into with W. J. Landry for its construction in the sum of $11,148.

The work of construction was commenced on August 1, 1911, and was satisfactorily completed on October 11, following.

The breakwater is 300 feet in length and 20 feet wide on top, with sides and ends battering 1 in 8, and consists of round timber crib-work, creosoted to half-tide, solidly filled with ballast and close-sheathed on the seaward face and ends.

CHARLES FORREST COVE.

Charles Forrest Cove, Richmond county, is a small cove on the western side of Cape Hogan, the extreme southern end of Madame island, about 5 miles from the town of Arichat, and is used as a landing place for the fishermen of the district.

The sum of $4,000 was voted for 1911-12, towards the construction of a breakwater for the protection of fishing boats.

On August 3 ult., plan and specification for the construction of the proposed breakwater, estimated to cost $11,246, were submitted to the department. Tenders were called for and received, but the work was not let.

The proposed breakwater is to be 330 feet in length and 20 feet wide and is to consist of continuous round timber crib-work with creosoted timber substructure, fully ballasted, and close-sheathed on the seaward face, the outer end and, for a distance of 20 feet, on the inner face. The depth of water at outer end will be 14 feet at low water.

CHEBOGUE.

Chebogue harbour, Yarmouth county, is situated about 7 miles south of the town of Yarmouth. Near its mouth and surrounded by Fox island, Veal island, Jack island and Shortliff point, is a small but well protected anchorage or roadstead which affords

shelter to a considerable number of small fishing vessels and other craft, engaged in fishing and general trade. The anchorage is partly protected on the south by Fox island, but its western portion, which is mostly dry at low water and much used at or near high tide by boats plying between Chebogue point and other ports, and by other craft, is guarded by a gravel bar or beach, 800 feet long, about 20 feet in width from high water to high water, and 4 to 5 feet high above H.W.O.S.T.

To preserve the beach, and the anchorage to the north of it, the department, in 1900-01, at a cost of $1,798, built crib-work 360 feet long, 8 feet wide and 8½ feet high.

Spring tides rise 15 feet.

Between 1901 and 1911, five small expenditures were made in renewals and repairs.

In 1911-12, the sum of $31.83 was expended in repairs to the floor, which had been slightly damaged by ice the previous winter.

CHEGOGGIN.

Chegoggin, Yarmouth county, is a small fishing and farming village, with a population of 200 people, situated on the Bay of Fundy coast, about 5 miles north of Yarmouth. The little bay of the same name is one-third of a mile deep, north and south, and about the same east and west, fully exposed to the southwest, but sheltered from every other quarter. It is dry at low tide, but at high water has a depth of from 12 to 14 feet.

Over half a century ago, a breakwater was built by the proprietors of the marsh, in a position immediately west of the present work. It was totally destroyed about 20 years ago, not a vestige of it being visible.

In the winter of 1895-6, the inhabitants, aided by a grant of $45 from the municipal council, built a small breakwater 80 feet long, 12½ feet wide, and from 6 to 11 feet high, on the south side of the stream outlet. In 1899-1900, the sum of $598.12 was expended by the department in lengthening the breakwater by the addition of a new block, 60 feet long, 15 feet wide and from 10 to 13 feet high. It is cheaply and substantially built of round-log crib-work of the usual type.

From 1900 to 1911, numerous expenditures were made in repairs, renewals and extensions, of which particulars will be found in the departmental reports.

In 1911-12, the sum of $289.33 was expended in building a small piece of crib-work, 50 feet long, 10 feet wide and from 5 to 7 feet high, on the north side of the mouth of the brook, in order to keep gravel from washing into and obstructing the berth for boats.

Work was done in September and October, 1911.

CHESTER.

Chester, Lunenburg county, is a village of about 1,000 people engaged in farming and general trade, situated at the head of Mahone bay, 45 miles south-west from Halifax. It is a favourite tourist resort during the summer season. It is a place of some importance owing to its fine situation and beautiful scenery.

In the year 1908-9, the department expended the sum of $113.80 in re-opening the channel through the isthmus joining the mainland and Peninsular point, which had filled in since it was last dug out in 1901.

During the year 1911-12, the sum of $782.86 was expended in widening and deepening this channel. The work was begun September 13, and completed September 30, 1911.

CHETICAMP.

Cheticamp, also called Eastern Harbour, Inverness county, is on the west coast of Cape Breton island, 18 miles north of Margaree. It is a secure harbour, being

sheltered from the west and south by Cheticamp island and a connecting beach. The entrance is from the north through a dredged channel.

A wharf, built on the eastern side of the harbour in 1890, consisted of an approach 125 feet in length and 30 feet in width over a distance of 60 feet from its outer end, with side walls and centre filling of stone, and an extension, 80 feet in length, in two blocks; a central block 20 by 20 feet and an outer block or head 25 feet in width and 60 feet in length along the channel face, with openings of 17 feet 6 inches.

During the years 1898 to 1900, the wharf was reconstructed and extended by the addition of a creosoted pile head 70 feet in length and from 33 to 37 feet in width.

During the fiscal year ended March 31, 1912, the sum of $1,103.23 was expended in the renewal of fender piles, walings, braces and chocks in the pile-head, and the crib-work, where it had settled, was raised and, where required, new covering was placed.

The depth at outer end, at low water, is 13 feet.

Spring tides rise 3½ feet.

The expenditure for the fiscal year 1911-12, is $1,100.82.

CHETICAMP POINT.

Cheticamp point, Inverness county, is the extreme southern end of Cheticamp island, about one mile to the eastward of a beach of shingle closing the southern end of Cheticamp harbour, which lies between the island and the mainland, and is entered from the north.

The sum of $10,000 was voted for 1911-12, towards the construction of the breakwater off the point for the protection of fishing boats.

On August 29 ult., plan and specification for the construction of the breakwater, estimated to cost $57,600, were submitted to the department. Tenders were called for and received, but the work was not let.

The proposed breakwater is to be 533 feet in length, with an 'L' on the north-eastern side of its outer end 238 feet in length, 20 feet wide for a distance of 471 feet from the shore and 24 feet wide for the remaining distance, including the 'L', and is to be constructed of round timber with creosoted timber substructure, and its seaward faces are to be close-sheathed. The depth of water along the outer end and outer face of the 'L' will be from 12 to 14 feet at low water.

CLARKS HARBOUR.

Clarks Harbour is a fishing village of some 1,200 or 1,400 people, situated on the southern side of Cape Sable island, and is perhaps the most important fishing village in Shelburne and Queens counties. Considerable difficulty has from time to time arisen in connection with the channels connecting the main channel with the various wharfs in the village. Owing to the increased draught of the vessels and boats used in this harbour, these channels have required deepening in the shape of removal of obstructions and upon which the department has several times expended considerable sums of money, but owing to the fact that only five-twelfths was available, the sum of $374.50 was expended.

Tides rise 10 to 11 feet spring, 6 neap.

CLYDE RIVER.

Clyde River, Shelburne county, is a small village of about 350 people, and is a combined fishing and lumbering community. The necessity for dredging at Port Clyde is made apparent through the fact that the Clyde Pulp Mill Company had

established a pulp plant on the Clyde river about 3 miles above its mouth at a place which is locally termed Queen's falls. Water borne freight was necessary in connection with the proper marketing and transportation of their product. In order to afford sufficient water for the vessels which they might charter to carry their pulp, the department during the last fiscal year, began the dredging of a channel, which when completed, will be 3,500 feet in length, and 150 feet in width, having a depth of 11 feet at L.W.O.S.T. Tides rise here, spring 7½ feet, and neap 5½ feet. During the past fiscal year, 27,150 cubic yards, as measured in scow, was removed by the dredge *Canada,* which began work on October 16, and completed the same on December 15, or practically two months' work. During the two months, whilst engaged at this place, she was employed in actual dredging 42 days, so that her daily average was 646½ cubic yards of spoil. This spoil consisted of sawdust, mud, &c., and the expansive factor for the same is largely in excess of what ordinarily is the case with soft mud. There still remains some 10,712 cubic yards to be removed, but the importance of other places requiring the presence of the *Canada* has led to the abandonment of the completion of the work until a later date. The most important parts of the channel have been dredged thoroughly to a width of 100 feet, and larger vessels than usually could come here, have this spring loaded at the said Clyde River Pulp Company's wharf.

CORSON'S WHARF.

Corson's wharf, Ingonish, Victoria county, is situated on the northern side of South Ingonish harbour on the eastern coast of Cape Breton island.

The sum of $1,000 was voted for 1911-12 towards the purchase of Corson's wharf with warehouse thereon and road thereto, and for its repairs and extension.

It is proposed to buy the old wharf including the warehouse thereon, and a road thereto, from Mr. Corson, who asks the sum of $1,500 therefor, and as the property will have to be acquired before any expenditure on the work can be made, nothing could be done with the amount authorized.

Plan and report on this work, and on repairs and extension required were submitted to the department on January 18, ult., and the estimated cost of acquiring the property and for repairs and extension proposed to meet requirements, was placed at $9,000.

COTTAGE COVE.

Cottage cove, Annapolis county, is a very slight indentation in the coast line of the south side of the Bay of Fundy, about 2 miles west of Port George. The population of the place comprises about 100 people, engaged in fishing and farming.

To afford some slight protection to the fishing boats, the department in 1911-12, expended the sum of $959.33 in the construction of a small breakwater. The work is 70 feet long, 20 feet wide and from 5 to 11 feet high.

COW BAY (PORT MORIEN).

Cow bay (Port Morien), Cape Breton county (south), is on the east coast of Cape Breton island, about 18 miles to the eastward of the entrance to Sydney harbour.

This work is fully described at page 18, Part IV, of annual report for 1910-11.

The sum of $4,750 was voted for expenditure during 1911-12, for completing the repairs to the breakwater, but at first only five-twelfths of the amount, or $1,979.16 were authorized for expenditure, and of this amount the sum of $1,989.84 was expended in procuring 500 barrels of cement, the full amount required for the com-

pletion of the work, and in placing large concrete blocks, containing 213 barrels of cement, on the seaward face of the breakwater.

When instructions were received to expend the balance of the appropriation (December 21, 1911), the season was too far advanced to continue the work, and no part of the additional amount authorized was expended.

CREIGNISH.

Creignish, Inverness county, is a farming and fishing district on St. George's bay. Its southern extremity is 3 miles from the Strait of Canso. Connection is made with Port Hood, the shiretown of the county, to the north, and Port Hawkesbury and the Intercolonial railway to the south, by railway of the Inverness Railway and Coal Company.

During the fiscal year 1910-11, the sum of $1,135.62 was expended in procuring all the materials, with the exception of covering, required for the construction of a landing wharf 220 feet long and 20 feet wide, close-sheathed on the seaward face and outer end. Depth at outer end at extreme low water 6 feet. Spring tides rise 4 feet.

The sum of $2,500 was voted for expenditure during 1911-12, in the construction of the proposed landing pier, for which the materials were procured during 1910-11, but as only five-twelfths of the amount voted was authorized for expenditure, and as that amount was considered too small to expend to advantage, the work was not commenced; and when the expenditure of the balance of the amount voted was authorized, it was too late in the season to commence, and no part of the amount was expended during the year ended March 31, 1912.

CRIBBIN'S POINT.

Cribbin's point, Antigonish county, is on the west coast of St. George's bay, 8 miles southward of Cape George and 5 miles to the northward of the entrance to Antigonish harbour.

The wharf, constructed (with the exception of a block at the outer end 20 feet in line of work by 58 feet), in 1892-3, is 320 feet in length and has an approach partly in embankment with stone retaining wall and partly in clay cutting 195 feet in length. It is 20 feet in width for a distance of 120 feet from the inner end, 30 feet in width for a further distance of 180 feet or to the original outer end, and 48 feet in width over the outer 20 feet. The seaward side of the wharf, from within 50 feet of the inner end to the outer block, is protected by close-sheathing and a talus of quarried stone sloping from 3 to 1, from 2 feet above low water and has a timber break 4 feet in height, extending from within 50 feet of the inner end to within 40 feet of the outer end, to prevent sand from being washed over the work into the dock.

Depth at outer end of wharf at L.W.S., 11 feet.

Spring tides rise 4 feet.

In 1910-11, the sum of $1,816.01 was expended in re-constructing the old work for a distance of 50 feet from the outer end by cutting down the old work to low water level and reconstructing with creosoted and native timber to the original height.

During the fiscal year 1911-12, the sum of $402.66 was expended in bulk-heading and re-ballasting four bays on the seaward side of the work.

Work was in progress November 11 to 30 and December 4 to 6.

CROFT'S COVE.

Croft's cove, Lunenburg county, is situated near Crescent beach, Petite Rivière. During the fiscal year 1910-11, the sum of $891.53 was expended in the construction of a boat landing to accommodate a number of people living on La Have islands and others visiting Crescent Beach, a popular summer resort.

During the year 1911-12, the sum of $206.74 was expended in the purchase of timber required for repairing the damage caused by ice during the winter months.

DELAP COVE.

Delap cove, Annapolis county, is situated on the south shore of the Bay of Fundy, 12 miles to the eastward of Digby gut. The breakwater is constructed on the eastern side of the mouth of the small tidal pond, which affords safe shelter for fishing boats, and a convenient place for keeping schooners and other small craft during the winter. It affords a good landing place for coasting vessels, and good shelter from easterly storms. The shore, on the opposite side of the stream, protects the breakwater and the pond from westerly storms.

Spring tides rise about 28 feet.

The breakwater, which is about 185 feet long, 28 feet wide and from 12 to 21 feet high, was built by the department in 1878-9. Since its construction, it has had frequent repairs and renewals, of which full particulars are given in the departmental report for 1909-10.

In 1910-11, the sum of $910.41 was expended in taking down and rebuilding a length of 50 feet of the shore end of the breakwater, which was in a dilapidated condition.

In 1911-12, the sum of $904.92 was expended in building a small wharf on the west side of the mouth of the creek, 42 feet long, 30 feet wide and 10 feet high, and in building a piece of crib-work on the north side of the tidal pond, or on the south side of the main breakwater, 76 feet long, 15 feet wide and 9 feet high; both works are unfinished. The former was begun September 13, 1911, and suspended October 31, 1911. The latter was begun on the 1st and suspended on October 31, 1911.

In March, 1912, the sum of $155.69 was expended in the purchase of timber for the completion of both pieces of work, while the total expenditure for the fiscal year was $1,161.67.

DELOREY'S BEACH.

Delorey's beach, to the southward of Monk's head, is on the southern shore of St. George's bay, between the entrance to Antigonish harbour and Bayfield roadstead.

A contract was entered into on the 21st of February, 1911, for the construction of a breakwater for the sum of $6,255. Work of construction was commenced June 26, and completed August 22, 1911.

The breakwater extends 280 feet to 4½ feet at L.W.S. The substructure is of creosoted and the superstructure of native timber. The seaward and outer end faces of the work are sheathed with creosoted and hardwood sheathing, and the top covered with 4-inch spruce plank.

Spring tides rise 4½ feet.

The expenditure during the fiscal year 1911-12, is $6,383.94.

DIGBY.

Digby, Digby county, the shire-town of the county, with a population of some 1,500 people, is beautifully situated on the south-western end of the Annapolis basin. It is an important station on the Dominion Atlantic railway, 67 miles north of Yarmouth, 150 from Halifax, and 20 miles from Annapolis. It is also the port of call for the daily steamer of the Dominion Atlantic railway plying between Digby and St. John. The harbour is open at all seasons, and well protected from nearly all quarters; storms, however, from the north and north-east, drive a choppy sea against

the pier, and if, at such times, there be much drift ice in the basin, the structure is likely to suffer damage.

The pier, nearly 900 feet long, was originally built by the Nova Scotia government some years before confederation.

Full particulars of the work, with details of expenditures in repairs and renewals, will be found in the departmental reports for 1906-07 and 1909-10.

In 1910-11, the sum of $27,394.18 was expended in repairs and renewals to the pier. The whole of the incline slip was rebuilt. The outer 40 foot block was taken down to low water mark, and partially rebuilt in creosoted timber. A new block, 12 feet wide, was built of creosoted timber and floated into position at the end of the pier.

In 1911-12, the sum of $6,613.18 was expended in continuing the repairs and renewals to the public pier. The freight shed was extended 40 feet, a number of piles in the upper part of the pier were replaced with sound timber and the crib-work on the south side of the pier, in its pilework portion, was lengthened and raised. Many other miscellaneous repairs and improvements were also made.

Dredging.

In 1911-12, Messrs. Beazley Bros. of Halifax dredged 100,455 cubic yards of class 'C' at 40 cents per yard in the approach to and the berth alongside, the public pier. The dredging was carried to a depth of 18 feet below L.W.O.S.T. Spring tides rise 27 feet. Work was begun on the 27th of June, 1911, and completed on the 25th of November, 1911.

The departmental dredge *New Brunswick* arrived at Digby on the 17th of August, 1911, and between that date and the 16th of September, 1911, removed 2,700 cubic yards of sand and gravel from the bay or cove called the Racquet at Digby.

The total expenditure for the fiscal year, including dredging, was $51,871.31.

DOVER.

Dover, Guysboro county, is a harbour and fishing station 4½ miles, by water, in a southerly and westerly direction from Canso harbour.

A contract was entered into on the 29th of September, 1910, for the construction of a block and span wharf, 210 feet in length and 20 feet in width, extending to 9 feet, L.W.S., for the sum of $3,836.

Work was commenced June 13, and completed July 19, 1911.

The expenditure for the fiscal year 1911-12, is $3,925.23.

EAST BAY.

East Bay, Cape Breton county, at the head of East bay, an arm of the Bras d'Or lakes, is 11 miles from the City of Sydney.

During 1910-11, the sum of $2,393.88 was expended in procuring the creosoted timber and other materials required in the reconstruction of the public wharf on the north side and near the head of the bay.

The sum of $4,000 was voted for expenditure by day labour during 1911-12, in the reconstruction of the old wharf, but as an examination showed that a wharf on a new site would cost much less and offer better facilities than on the old site, it was decided to build it on the new site.

The materials procured were for a crib-work wharf, consisting of blocks and spans, and as the new site was well adapted for a pile-wharf, the new wharf was built

on a creosoted timber pile foundation and its total cost amounted to only $1,407.45.

The work constructed consists in a pile-work 61 feet by 25 feet, connected to the shore at each side by a crib-work block 10 by 20 feet, and the space between these blocks is filled in with clay and gravel with a coating of 1 foot of gravel on top.

The depth of water at low water on the channel face of the wharf is about 11 feet.

EAST BAY (NORTH SIDE).

East bay (north side), Cape Breton county (north), is, as the name implies, on the north side of East bay, an arm of the Great Bras d'Or lake, about 5½ miles from its head.

The wharf, built by the department during 1889-90, is 220 feet in length and extends to 10 feet at low lake level, and consists of an approach of brush and stone, 50 feet long and 20 feet wide, of four native timber crib-work blocks, each 20 by 20 feet, and of an outer block also of native timber, 20 feet in line of work and 40 feet along outer face, with intervening spans of 17½ feet in width.

During the fiscal year 1902-3, the sum of $600 was expended in repairing the approach and in renewing the floor-stringers, covering, guard-rails and fenders of the block and span-work, and the face-timbers and ties above high water in all, excepting the outer block.

During 1911-12, the sum of $109.62 was expended in the construction of a freight shed on the wharf. The building is 10 by 12 feet, with 7 foot-posts, and walls and roof covered with cedar shingles. It is provided with one wide door and one window, and the outside walls are painted with two coats of paint.

EAST CHEZZETCOOK.

East Chezzetcook, Halifax county, is a deep inlet on the Atlantic coast, about 20 miles to the east of Halifax harbour. The inlet is surrounded by a population of some 300 or 400 engaged in fishing and farming.

In 1904-5, the sum of $3,993.26 was expended in the construction of a detached breakwater for the purpose of creating a scour in order to deepen the channel over the bar at the mouth of the harbour. During the year 1906-7, a further sum of $4,000 was expended in extending and completing this work.

The completed work is 846 feet long, 16 feet wide and from 8 to 16 feet high. In the fiscal year 1910-11, the sum of $1,128.33 was expended in the purchase of timber for the construction of an additional detached breakwater to be completed under the 1911-12 appropriation.

During the year 1911-12, the sum of $524.50 was expended in the purchase of additional timber for this purpose, but it was decided to change the location of the breakwater to a point known as 'The Greves' beach, where the timber will be used in the construction of a breakwater for the protection of the fishing boats at that place.

Wharf.

In the year 1900, the sum of $1,729.45 was expended in the construction of a pile and timber wharf, to serve as a landing pier for produce, &c.

In the year 1911-12, the sum of $498.43 was expended in making extensive repairs to the top of the wharf. The whole of the planking was renewed. Renewals were also made to flooring, stringers, guard-rails and fender piles.

Work was begun August 2, completed September 30, 1911.

EAST PORT MEDWAY.

East Port Medway is a settlement of about 300 people situated about 4 miles northeast of Port Medway proper on the east side of Port Medway harbour. About 50 years ago, the provincial government built a wharf which was used as a ferry landing as well as to accommodate the other requirements of this locality. In the year 1900, this wharf was reconstructed by this department at a cost of $1,670. It now consists of a rock bank 76 feet in length, and four cribs each 20 feet long, separated from each other by spans 18 feet in length. The rock bank has a width of 25 feet on top and a height of 10 feet at the outer end, whilst the crib-work is all 22 feet wide and has a height at the outside end of about 19 feet.

The original appropriation for replanking this wharf was $400, made in the year 1910-11. During that year, the sum of $85.55 was expended in effecting certain repairs, but owing to difficulty in procuring the timber, the work had to be left over until this year. The work was commenced on the 7th and completed on August 19, 1911; and the amount expended was $325.35. The wharf is replanked for its entire length, new guard-rails and stringers were put in position and a number of the top logs and a few of the fenders were renewed.

Tides rise: spring, 7 feet; neap, 4½ feet.

EAST RIVER.

Dredging.

East river, Pictou county, is the most easterly of three branches of Pictou harbour. It is navigable for small vessels from opposite Pictou to the town of New Glasgow, 7 miles inland.

Dredging to 21 feet at low water spring tides in a channel 150 feet in width at bottom, undertaken by the suction dredge *Northumberland,* late in the season of 1908, was continued in 1909-10, 1910-11 and 1911-12.

During the season of 1911, the dredge *Northumberland* completed dredging between Stn. 1300, opposite Pictou and 24050, opposite Stone House Point, with the exception of dredging between Stn. 1300 and 3400, of some cleaning up between 3400 and 24050 and of some dredging to be performed by contract, Stn. 5000 to 5800 and 13600 to 15000. The quantity of material removed, principally mud, was 714,433 cubic yards in place.

Work was in progress May 29 to December 2, 1911.

The expenditure during the fiscal year was $27,951.10.

EATONVILLE.

Eatonville is a small settlement where extensive lumbering interests have been carried on for the last 25 or 30 years. It is situated about 12 miles west of the town of Advocate. There are two breakwaters; the first one was constructed a great many years ago by the department, and has been from time to time extended. During the fiscal year 1908-09, the second breakwater was constructed on the opposite side of the cove, so as to further protect the entrance. The repairs treated with in this report were applied exclusively to the old breakwater.

This old breakwater is constructed of round log continuous crib-work sheathed on the inside for 160 feet of its length. It is 205 feet in length, 20 feet wide on top, has a height of 10 feet at its outer end.

During the past year, the sum of $2,123 was expended making the repairs to this work. The work was commenced on September 25, 1911, and was completed on November 18, 1911. The repairs were thoroughly and efficiently made, and consist of the

renewal of the outside 30 feet in length to the old structure for the top height of 13 feet; the renewal of the next 130 feet in length of the top 6 feet, besides this, the inside face for a distance of 100 feet, was sheathed.

Tides rise here, spring 40 feet, neap 33 feet.

ECUM SECUM.

Ecum Secum inlet, Guysboro county, is on the southern or Atlantic coast of Nova Scotia, 9 miles to the westward of Liscomb harbour, and near the boundary line between the counties of Guysboro and Halifax.

The wharf, constructed in 1901-02, is 160 feet in length and 22 feet in width on top with an 'L' at the outer end, 22 by 22 feet.

It is a continuous structure of round timber laid open-faced, fully ballasted and close-sheathed on the outer end and on the seaward side for a distance of 60 feet from the outer end and on the eastern face of the 'L.' The depth of water at the outer end at L.W.S. is 10½ feet.

During the fiscal year 1911-12, the sum of $416.42 was expended in removing and replacing about 13,000 feet B.M. of covering, some pieces of guard rail and in paying balance due on some sheathing purchased in 1910-11.

Work was in progress September 14 to 28.

EEL BROOK.

Eel brook, Yarmouth county, is a thrifty fishing and farming settlement of about 600 people, situated on the east side of the many islanded bay, forming the mouth or estuary of the Tusket river. It is 12 miles east of Yarmouth.

In 1910-11, the sum of $649.81 was expended in deepening, widening and protecting the little brook, about 500 feet long, connecting Eel lake with the head of the harbour. To protect the sides of the brook, cribwork of a total length of 547 feet was built to an average height of 3 feet and a width of 7 feet. The bottom of the brook was also cleared of boulders, so that boats could pass in and out.

In 1911-12, the sum of $833.53 was expended in beginning the construction of a public wharf. The work, so far built, consists of a stone embankment, 150 feet long, 30 feet wide and from 2 to 8 feet high, laid up with vertical sides and provided with fenders and guard timbers. Work was begun on September 19, and suspended on December 21, 1911.

In March, 1912, the sum of $500.69 was expended in the purchase of timber for the completion and extension of the work.

The total expenditure in 1911-12 was $1,334.22.

ENGLISHTOWN.

Englishtown, Victoria county, is situated on the southern shore of, and immediately within, the entrance to St. Ann's harbour, a fine basin 7 miles in length, about 2 miles in width and carrying a depth of about 50 feet, at the head of St. Ann's bay, on the north-east coast of the Island of Cape Breton.

During 1899-1900, a public wharf 236 feet in length, extending to 12 feet at low water springs, and consisting of blocks and spans, was built by the department to accommodate the traffic of the locality.

The government dredge *Cape Breton,* during the month of July, 1911, worked here part of two days, in deepening berths at the sides of wharf, to 10 feet at low water, over an area of 50 by 55 feet on the western side, and 25 by 60 feet on the eastern side, to permit of steamers and vessels to lay there during low water springs.

The quantity of materials dredged is 1,260 cubic yards, and consists of loose rock and sand which was deposited at a distance of 2 miles from the place of operation.

ESKASONI.

Eskasoni, Cape Breton county, is situated on the northern side of East bay, the eastern arm of the Big Bras d'Or lake, about 7 miles from Benacadie point, at the entrance to and 9 miles from the head of the bay.

The harbour is formed by outlying islands and connecting beaches; it is large with a good depth of water and perfectly safe.

The public wharf, constructed by the department, under contract during 1907-8, is 188 feet in length and 20 feet wide, with an 'L' on the western side of the outer end, 20 by 20 feet, and extends to 12 feet at low water; with the exception of a crib-work shore abutment, 22 feet in length, it is constructed on creosoted timber pile bents, consisting of five piles each, and is protected by creosoted timber fender piles on each side of the approach for a distance of 39 feet and around the three outer faces of the pile-head.

After the completion of the work under contract, the sum of $100.70 was expended by day labour, in the construction and fencing of a road, 250 feet in length and 20 feet in width, to connect the wharf with the public road.

The sum of $110 was authorized for expenditure during 1911-12, for the construction of a small freight shed on the wharf, but no part of the amount authorized has been expended.

FALLS POINT, WOODS HARBOUR.

Falls point is situated at Woods harbour, about one mile above the railway station, which is at the lower end of the settlement. In former years, ice forming in the harbour and moving out in time of storm, would very often carry with it several of the boats belonging to the fishermen in this place. In order to provide shelter, a breakwater was begun during the fiscal year 1910-11, and upon it the sum of $3,882.04 was expended. An additional $3,000 was granted during the past fiscal year for completion of the same. Of this amount, the sum of $1,255.04 was expended in procuring material, but owing to the fact that no further amount was available during the season when work could be done, the extension was not completed. In 1910-11, there was constructed here a rock bank approach 112 feet in length, 24 feet wide on top, and 10 feet high at its outer end, also 210 feet in length of continuous crib-work 20 feet wide on top with a height of 22 feet at the outer end.

Spring tides rise 11 feet, neap 8 feet.

FINLAY POINT.

Finlay point, Inverness county, is on the western coast of Cape Breton island, about 3 miles north of the entrance to Mabou harbour.

During 1903-4-5, a wharf 15 feet wide and extending 148 feet to low water, was constructed by the department to serve as a landing place and a shelter for boats, and during 1907-8, a crib-work block 25 feet by 18 feet, was built adjoining the inner face at the outer end of the crib-work.

The sum of $2,500 was voted for 1911-12, towards the extension of the wharf. Plan and specification for the proposed work, estimated to cost $6,900, were prepared and submitted to the department on August 30 ult. Tenders were called and received, but the work was not let.

The proposed extension will be 250 feet in length, in line of present work, and 20 feet wide on top, with an 'L' at its southern end, 70 feet long and 20 feet wide. It is to consist of round native timber crib-work, fully ballasted and fendered, and the seaward face of the extension and the three faces of the 'L' are to be close-sheathed between the fenders.

FIVE ISLANDS.

Five Islands, Colchester county, is situated on the north shore of the Basin of Minas, at the extreme western end of Colchester county, 15 miles east of Parrsboro. The total population is from 300 to 400 and the exports consist chiefly of lumber, deals, cordwood, potatoes and fish. From 20 to 30 coasting schooners load here annually.

In the year 1884, the department built a public wharf at a cost of $2,500 at the upper or east end of the settlement, in the mouth of the East river. It is 75 feet long, 40 feet wide and 28 feet high at the outer end, where at high water ordinary spring tides there is 25 feet of water. The work is of the ordinary type of round log, stone-filled crib-work. The sides batter 1 in 12 and are double fendered. From 1893 to 1904, various repairs were made to this work and an inclined ramp for the purpose of loading deals on to the decks of schooners, lying dry at low water, was constructed.

In the year 1911-12, the sum of $248.59 was expended in the purchase of timber in readiness for repairs to be done under the 1912-13 appropriation.

Spring tides rise 48 feet, neaps 40 feet.

FOURCHU.

Fourchu, Richmond county, is a fishing settlement 10 miles to the westward from Louisburg, on Fourchu inlet, a cove facing the east, and just within the borders of Richmond county.

The sum of $300 was voted for 1911-12, towards the construction of a wharf. Plans and specifications for the proposed pile-wharf, estimated to cost $5,000, including the cost of the property, were prepared, and on August 14, ult., they were submitted to the department. Tenders for its construction were called for and received, but the work was not let.

An order in council was passed on September 11, 1911, granting authority to purchase from D. E. MacLean, for the sum of $1,200, the property required in connection with the proposed work.

FOX ISLAND.

Fox island, Halifax county, is situated on the Atlantic coast of Nova Scotia, 13 miles east of the city of Halifax, and is about 900 feet from the mainland. It is only some 3 or 4 acres in extent and no point on it is more than 6 feet above H.W.O.S.T. It has no permanent inhabitants, but during the summer season it is used by the fishermen as a fishing station.

In the year 1886-87, the department built a crib-work protection extending over the whole length of the beach between the mainland and the island, a distance of 935 feet, and in 1892 an extension of 252 feet in length was built to protect the main part of the island. Numerous expenditures have been made for repairs since that date. In the year 1910-11, the sum of $1,408.81 was expended in the construction of a small breakwater 100 feet in length for the protection of a boat landing on the western side of the island.

During the year 1911-12, the sum of $1,163.19 was expended in the purchase of material for the construction of an addition to the breakwater, to be completed under the 1912-13 appropriations.

Work was begun in June and discontinued October 26, 1911.

FRENCH RIVER.

French river, Victoria county, is a small settlement on that part of Cape Breton island, commonly known as the north shore, and is situated about midway between the harbours of St. Ann's and South Ingonish, and distant about 15 miles from either.

On March 18, 1911, plan and specification for a small breakwater, to form a boat-harbour and estimated to cost $4,100, were submitted to the department. Tenders for its construction were called, and on September 27, 1911, an order in council was passed authorizing the acceptance of the tender submitted by Messrs. Robert and Bart Musgrave, of North Sydney, in the sum of $4,600.

The work under contract is 200 feet in length and 16 feet in width on top, with faces battering 1 in 8, and is to be built of round timber, with creosoted timber substructure, fully ballasted and protected by fenders all around and by close-sheathing on the exposed faces.

The necessary materials were procured during the winter, but the work of construction was not commenced up to the end of the year ended March 31, 1912.

FRIAR'S HEAD.

Friar's head, Inverness county, is on the west coast of Cape Breton Island, 6 miles to the northward of the entrance to Margaree harbour.

A work undertaken in 1900-1, to close an opening in a ledge of rock with the object of affording partial shelter to a small wharf and anchorage for boats, and completed in 1902-3, consisted of a concrete wall, 90 feet in length, 4 feet in width on top and 8 feet in height from 1 foot above low water. In 1903-4, the wall was extended 13 feet, and a wall 4 feet in height and 4 feet in width was constructed on its seaward side, to prevent undermining.

The sum of $2,000 was voted for 1911-12, to repair and extend the breakwater, which was estimated to cost $4,200.

Owing to the pressure of more important work and the lateness of the season when instructions were received, and the impossibility to do concrete work successfully in the fall of the year, no part of the amount authorized has been expended during the fiscal year ended March 31, 1912.

FRUIDS POINT.

Fruids point is situated at the head of Ragged Island bay, about 3½ miles from the town of Lockport, and is the point of transference for all freight to the said town of Lockport which comes or goes by the Halifax and South Western railway. A very substantial wharf was constructed by this department several years ago, upon which the railway siding operates. The town of Lockport has a ferry steamer which plies between there and Fruids point and wharf daily, for the purpose of handling freight and passenger business. The entrance and approaches to the wharf were somewhat limited in width, on account of a number of rocks which really require removal. As the business at this place was increasing rapidly, the department was asked during the last year to undertake the task of removing the said obstructions, and placed in the estimates for the past fiscal year the sum of $5,000 for the said purpose. During the past fiscal year, the wrecking steamer *Coast Guard* was engaged in removing 455 tons of rocks at a cost of $2,018.25, and the work will be no doubt satisfactorily concluded during the present season.

Spring tides rise 7 feet, neap 4½ feet.

GABARUS HARBOUR.

Gabarus harbour, Cape Breton county (south), is on the eastern side of and near the head of Gabarus bay, and is entered by a shoal and narrow channel; although its area is limited, it is of great value to the fishermen of the district.

Several small amounts have been expended to improve the entrance, but owing to the existence of rock, it was found too expensive to improve; a new channel was

opened, 25 feet wide with a depth of from 2 to 3 feet at low water, which was afterwards completed to a depth of 3½ feet at low water with a width of 30 feet at the bottom.

Later, a brush and stone retaining wall was constructed to prevent the sand being swept over the beach by the sea into the harbour.

The sum of $2,000 was voted for 1911-12, for the extension of the retaining wall, by day labour, but when arrrangements were completed, it was too late to commence operations successfully. Out of the amount voted, the sum of $499.60 only, was expended during the winter in procuring a part of the materials required for the construction of the proposed work.

GILLIS POINT (EAST).

Gillis point (east), Victoria county, is a small settlement on the western shore of the Little Bras D'Or lake, about 1¼ miles to the northward of Gillis point proper, and about 6 miles from Iona station on the I.C.R.

The sum of $2,000 was voted for expenditure during 1911-12, in the construction of a wharf by day labour and for which the creosoted timber was procured during 1910-11; out of the amount voted, the sum of $912.50 has been expended in procuring the balance of the materials required, and in the construction of a portion of the inner end of the proposed wharf.

The proposed wharf will be 142 feet in length, 16 feet in width on top and will extend to 13 feet at low lake level. It will be a block and span structure, the blocks will be built of round timber, creosoted to high lake level, fully ballasted and fendered, and the faces of the two outer blocks are to be close-sheathed between the fenders.

GRAND ETANG.

Grand Etang, Inverness county, is on the Gulf of St. Lawrence, about midway between the harbours of Margaree and Cheticamp, on the western shore of the island of Cape Breton.

Works designed to improve the entrance to a large pond and thus make it available for the use and shelter of fishing boats and small vessels, were completed in 1894-5, and a bridge across the pond about 500 feet within the entrance was constructed during 1895-96 and re-constructed during 1902-3. This work is fully described at page 28, Part IV, of annual report for 1910-11.

During 1898-99, dredging between the piers to 6 feet at extreme low water, was performed, and during 1910-11-12 the channel, the pond inside up to the bridge and outside beyond the outer end of works, the water was increased to an average depth of 9 feet at low water, by dredging.

The sum of $1,000 was voted for expenditure during 1911-12, to complete repairs to the protection works, but owing to the lateness of the season, when instructions were received, the sum of $479.75 only was expended during the fiscal year.

Dredging.

During 1898-99, dredging between the piers to 4½ feet at extreme low water, was performed, and during 1910-11 a contract was entered into with Mr. Vivian T. Bartram of Toronto for dredging the entrance and the pond up to the bridge, to a depth of 10 feet at low water, and the quantity involved was 51,000 cubic yards, but of the amount only 4,986 cubic yards were removed during the year.

It having been deemed advisable to increase the depth to 12 feet at low water, both in the channel and in the basin inside, the contractor was permitted to continue

the work under the old contract, in addition to the extra depth required, and a new arrangement made with him for the removal of a total quantity of 80,000 cubic yards scow measure at 37½ cents per yard, but up to December 2, 1911, when the work had to be suspended for the season, only 61,671 cubic yards of mud, clay and stones were removed. The desired depth has not been obtained anywhere, the depth averaging at present about 9½ feet.

The expenditure on dredging amounted to $24,263.61.

GRASS COVE.

Grass cove, Victoria county, is on the western side of the Little Bras d'Or lake, about 2 miles to the northward of Iona, a station on the Intercolonial railway, at the western end of the Grand Narrows railway bridge.

In order to enable the inhabitants at and in the vicinity of Grass cove, to ship pit timber to the coal mines in eastern Cape Breton, during 1908-9, the sum of $982.86 was expended in procuring all the native timber, iron and ballast required for the construction of a public wharf, and during the fiscal year 1909-10, the sum of $2,097.12 was expended for the delivery of the creosoted timber necessary for the substructure of the proposed wharf.

During the year 1910-11, the sum of $1,978.07 was expended in the construction of the wharf, for which the materials were procured during 1908-9 and 1909-10.

The wharf, as completed, is a block and span structure extending to 12 feet at low water, and is 164 feet in length and 18 feet wide, with an 'L' on the outer end 18 by 20 feet; the blocks consisting of round timber crib-work with creosoted timber substructure.

The sum of $110 was authorized for expenditure during 1911-12, for the construction of a small freight shed on the outer end of the wharf, but the work was not done, and no part of the amount authorized was expended up to the end of the fiscal year.

Total expenditure on this work to March 31, 1912, is $4,961.76.

GREENER'S WHARF.

Greener's wharf, Sydney Mines, Cape Breton county, is about one mile to the north-eastward of the town of North Sydney, on the northern side of Sydney harbour. It is a small shipping pier owned by the Sydney Coal Company, extending to about 8 feet at low water.

During the fiscal year 1911-12, the government dredge *Cape Breton* was engaged for part of three days (December 19 to 21, 1911), in cutting a channel to a depth of 12 feet at low water from outside to the wharf, but owing to the lateness of the season work had to be suspended before it was completed.

The channel required is about 200 feet in length and averages about 80 feet in width and of this about one half was completed. The quantity of material removed was 1,975 cubic yards, scow measure, of ballast and sand, and it was deposited at a distance of about 1½ miles from the work.

GROVE POINT.

Grove, or Monday point, is on the southern side of Boularderie island, about 3½ miles southwest from the highway bridge across the entrance to the Little Bras d'Or channel.

The wharf was constructed by the department during 1893-94-95, and consists of a stone embankment, 122 feet long with gravel covering; of a span 16 feet long, and

of a native round timber crib-work block, 22 by 44 feet at its outer end, forming a 'T' head.

As the crib-work below the line of low water was completely destroyed by the teredo, it was decided to construct a new head with creosoted timber substructure, and during 1910-11 the necessary creosoted timber required was procured.

The sum of $1,500 was voted for 1911-12 to reconstruct the wharf for which the materials were procured during 1910-11, but when authority was received, it was too late in the season to commence operations, no part of the amount granted was expended during the fiscal year.

The proposed work will consist of a crib-work block, with creosoted timber substructure, 20 by 40 feet, placed outside of the old head and connected with the stone abutment by a pile approach 41 feet long and 16 feet wide, the piles being driven into the old crib-work. The depth of water, at low water, on the channel face of the new head, will be 13 feet.

HALL'S HARBOUR.

Hall's harbour, Kings county, is situated on the south side of the Bay of Fundy, 65 piles northeast of Digby gut and 12 miles southeast of Scott's bay; it is 12 miles north-east of Kentville, the county town of Kings, and headquarters of the Dominion Atlantic railway.

The harbour, though small, is one of the best, at high water, between Scott's bay and Digby gut. Spring tides rise 39 feet, neaps 33. The village has a population of about 150 people, and some years ago had a considerable shipping trade, which, however, of late years has greatly declined.

About the year 1839, the inhabitants, aided by the provincial government, built timber retaining walls on each side of the inner harbour, which consists of a land-locked basin, dry at low tide, of about an acre in extent, to permit vessels to lie alongside the public road. About 1844, an addition, seawards to the wall, on the west side, was built, in order to prevent the accumulation of gravel at the mouth of the harbour, and to serve as a breakwater. In 1884, it was repaired by the department at a cost of $750. On November 6, 1884, the outer block was destroyed by a violent gale, the accompanying heavy sea having the effect of depositing a bank of gravel which almost entirely obstructed the mouth of the harbour.

From 1884 to 1910, many expenditures were made in repairs and renewals, of which a full account will be found in the departmental report for 1909-10.

In 1910-11, the sum of $1,400 was expended in constructing a small new breakwater on the east side of the mouth of the little harbour, for the purpose of affording some shelter from east and northeast storms. The work, which is substantially built of round log crib-work, is 80 feet long, 20 feet wide and from 5 to 12 feet high.

In 1911-12, the sum of $234.39 was expended in renewing the hoisting gear of the sluice gates, constructed at the head of the little harbour in 1905-6, for the purpose of creating a scour and washing away the gravel that periodically is washed in to the obstruction of the schooner berth alongside the breakwaters.

The sum of $14.60 was also expended in shovelling gravel, while the hoisting gear of the sluice gates was being removed, to permit a schooner to approach and lie alongside the breakwater.

Work was done in November, 1911.

HAMPTON.

Hampton, Annapolis county, formerly called Chute's cove, is situated on the southeast coast of the Bay of Fundy, 27 miles northwest of Digby Gut, and 6 miles northwest of Bridgetown, an important station on the Dominion Atlantic railway.

It has a population of about 200 people, engaged in fishing, farming and the export of cordwood and timber.

In 1855-56, a small pier, 165 feet long, was built near the western side of the cove, the provincial government contributing $600 to its cost. The site was chosen by commissioners, apparently without professional advice, and was objectionable on many accounts. At a cost of $3,000 in 1879, an addition of 121 feet was made by the department, and the older portion of the work was strengthened with the hope of remedying some of the defects of the location.

In 1881, on further examination, it was found that the original work had been undermined by the sea and that owing to the direction of the pier, the shingle was fast shoaling the water on the inside. It was therefore decided to rebuild the structure on another site, about half a mile to the eastward, which work was carried out at a cost of $2,300. The new pier, as then completed, was 246 feet long, more substantially built and better situated than the old one, being located immediately to the westward of a small brook, which serves to keep the schooner berth alongside free from sand.

Between 1889 and 1910, numerous expenditures were made by the department in repairs, renewals and extensions, of which a full account will be found in the annual report, 1909-10.

In 1910-11, the sum of $3,044.41 was expended in constructing an extension to the main or west breakwater, the new piece being 55 feet long on the west side, 50 feet long on the west side, from 20 to 25 feet high and 25½ feet wide on top. The appropriation did not suffice to complete the work, owing to the imperative need of making some repairs to the east breakwater, which consisted of the raising and rebuilding of the upper portion of the work to make up for settlement caused by storms in the previous winter.

In 1911-12, the sum of $414.68 was expended in completing the extension to the breakwater begun last year. The new block is 55 feet long on the east side, 50 feet on the west side, 25½ feet wide on top and 20 to 25 feet high, built of substantial crib-work. The work was done in October and November, 1911.

The sum of $397.67 was also expended in the purchase of timber for repairs and renewals to both breakwaters.

The total expenditure for the fiscal year amounted to $812.35.

HERRING COVE.

Herring cove, Halifax county, is a small, narrow and nearly land-locked inlet, situated on the western side of the mouth of Halifax harbour, 5½ miles in a direct line from the city of Halifax. Around the cove is a fishing village of about 150 people wholly dependent upon the fishing industry, the annual catch being valued at $100,000.

In the year 1903-4, the sum of $11,475 was expended in the construction of a breakwater on the eastern side of the mouth of the cove to form a protection from the sea.

In the year 1911-12, the sum of $587.63 was expended in the construction of a public wharf; the work done consisting of the construction of an approach 40 feet long, 60 feet wide and from 3 to 8 feet in height.

The work was begun September 12 and completed October 18, 1911.

INDIAN BROOK.

Indian brook, Victoria county, is a large stream emptying into the western shore of St. Ann's bay at a point about 5½ miles to the northward of the entrance into St. Ann's harbour.

Just before entering the bay, the brook divides into two branches, of which the southern follows a straight course into the sea and the northern turns in a northerly

direction and, following the inner side of a gravel beach for a distance of about half a mile, empties into the bay at the end of the beach.

The mouth of the northern outlet is used as a harbour for fishing boats, but was obstructed by some rocks which were dangerous to boats entering during a heavy sea.

The sum of $200 was authorized for expenditure during 1911-12 in the improvement of the entrance and the sum of $199.07 was expended in the removal of the rocks, which interfered with the free access to the boat harbour inside.

INVERNESS.

Inverness, formerly known as Broad cove, Inverness county, is an incorporated mining town with a population of 3,500, on the north-western coast of Cape Breton Island, about midway between the harbours of Mabou and Margaree and 60 miles from Port Hastings on the Strait of Canso, with which it is connected by rail.

McIsaac's pond, now Inverness harbour, is separated from the Gulf of St. Lawrence by a sand beach about 400 feet in width. For the purpose of shipping coal from the mines, many years ago, a company dredged a channnel through the beach into the pond, and protected its sides with a crib and pile-work, but after a few years the channel filled up and was abandoned.

The property was bought by the department with a view of re-opening and protecting the channel.

An amount of $9,000 was voted for 1911-12 towards the improvement; the sum of $3,782.77 was expended in the reconstruction of 460 lineal feet of pile, brush and stone work, 20 feet wide of the northern channel protection work, and for which the materials were procured during 1910-11; in repairs to the southern protection work, and in excavating a channel 40 feet wide from half tide inside to half tide outside.

When instructions were received to expend the balance of the vote, it was too late in the season, and no further expenditure was incurred.

The improvement aimed at is a channel 50 feet wide with 12 feet at low water, protected on each side by channel protection piers, and the estimated cost of the undertaking is placed at $85,000.

IONA.

(Old Wharf.)

Iona, Victoria county, is on the northern site of Barra strait, which connects the Great with the Little Bras D'Or lake. It is a station on the Intercolonial railway, and a landing place for the steamer, which carries mails and passengers to and from Baddeck, and connects twice a day with the express trains going east and west.

The old wharf, so called to distinguish it from the new wharf, built on the eastern side of the railway bridge, was originally constructed by the provincial government, but was acquired by the department, by which it was reconstructed and extended.

The work is 195 feet in length on the western face and consists of an approach 129 feet long and 20 feet wide; of a span 24 feet in length, and of a 'head' 42 feet wide on the western, 22 feet wide on the eastern face and 70 feet long on the channel face.

The approach is constructed of close-faced timber cribwork, partly covered with gravel and partly planked over, and the head is built on creosoted timber piling and was originally protected with hardwood fender piles, but these were replaced with creosoted timber piling during 1907-8.

The sum of $500 was voted for expenditure during 1911-12, for the renewal of covering and cap-timbers on the pile-work, but when arrangements were completed it was too late to carry on the proposed work; but no expenditure was incurred during the fiscal year.



Grand Etang Harbour, general view.



Grand Etang Harbour works at entrance.



Arichat Wharf and Warehouse, completed 1911-12.



South Ingonish Wharf completed 1911-12 and showing harbour entrance.



Cape Rouge Breakwater, completed 1912-13.

JAMESVILLE.

Jamesville, Victoria county, is a country district with a population of about 30 families, situated on the Great Bras d'Or lake, about 2 miles west of Iona, a station on the Intercolonial railway.

The sum of $4,000 was voted for 1911-12 towards the construction of a breakwater for the protection of fishing boats. On August 18 ult., a plan and specification for the proposed breakwater, estimated to cost $9,220 were submitted to the department, and tenders for its construction were called for and received, but the work was not let.

The proposed breakwater is to consist of an isolated crib-work block 250 feet in length and 15 feet wide, with creosoted timber substructure, connected with the shore by creosoted timber pilework 204 feet in length and 15 feet wide. Along the channel face of the breakwater, which is about parallel to the shore, there will be a depth of from 8 to 9 feet of water at low lake level.

JONES HARBOUR.

Jones harbour is a fishing village used by from 80 to 100 fishermen, and at which place the department, about the year 1889, constructed a breakwater. The channel is very narrow and the tide runs at a very rapid rate, so that the navigation of fishing boats is a very difficult matter and very often results in serious damage. In addition, certain portions of the channel were impeded through the existence of some very large boulders which, if removed, would render it navigable for larger boats. During the past fiscal year, the sum of $1,500 was granted for the purpose of removing these rocks, but as only five-twelfths was available, therefore only $624.90 was expended. The wrecking steamer *Coast Guard* with full equipment worked during the months of September and October, 1911, and removed 125 tons, and the completion of the work will be undertaken at the earliest opportunity.

Spring tides rise 7 feet, neap 4½ feet.

KINGSPORT.

Kingsport, King's county, is a village of some 500 people, on the south-west side of the Basin of Mines, between the mouth of the Cornwallis river and Cape Blomidon. It is the terminus of a branch of the D. A. railway, running to Kentville, 14 miles to the south.

A pier, 445 feet in length, built on piles, stood here when the harbour was taken in charge by the Department of Public Works. In 1873-4, the department built crib-work, 12 feet wide, on the eastern or exposed side of the wharf, for the purpose of breaking the force of the sea. In 1875, the work was extended a length of 240 feet, by a width of 30 feet, in order to increase the sheltered area and afford earlier access to the roadstead in lee of the pier, which, owing to the great range of tide, was dry between half ebb and half flood. In subsequent years, repairs were several times made. In December, 1890, the Cornwallis Valley railway was opened for public traffic and about the same time the wharf, which forms the terminus of the railway, and on which is a track, was leased by the department to the railway company.

During the fiscal year 1901-2, the sum of $9,276.72 was expended in rebuilding the upper half of the outer block of crib-work, 270 feet long, which was built in 1875. A widening or reinforcing block, 10 feet wide, was also built on the north side of the whole length of this outer portion.

In 1902-03, the sum of $4,934.60 was expended in continuing the repairs and renewals to the work begun the previous year.

In 1903-4, the sum of $5,052.61 was expended in continuing repairs and renewals carried on during previous years.

In 1905-6, the sum of $459.50 was expended in rebuilding the crib-work that protected the public road approach from the beach to the shore end of the pier.

In 1911-12, the sum of $11,045.97 was expended in building, by contract, an extension to the public pier. The work, which is of substantial stone-filled crib-work, of native timber, is 140 feet long, 40½ feet wide, and from 24 feet to 30 feet high. It was begun on the 16th of May, and finished on the 14th of October, 1911.

LAKE AINSLEE.

Lake Ainslee, Inverness county, is a large freshwater lake, situated in the centre of the county, and its northwestern arm, called Loch Ban, is skirted by the Richmond and Inverness railway.

The upper end of Loch Ban, near which the railway runs, is cut off from the rest of the lake by a sand beach which prevents boats from reaching the shore; it is proposed to cut a channel to 6 feet at low water through the beach and to protect its sides by pile, brush and stone protection works.

For the purpose of making this improvement, the sum of $8,000 was voted for 1911-12.

Plan and specification for the proposed work were prepared and tenders were called for and received. An order in council was passed granting authority to accept the tender of Messrs. James McDonnell and S. Hart, at $6,850, but on October 13, instructions were issued not to take any action in the matter.

The proposed channel is to be 689 feet in length, 15 feet in width at the bottom, and will have a depth of 6 feet at low lake level.

LARRY'S RIVER.

Larry's river, Guysboro county, is a fishing settlement and harbour at the western extremity of Tor bay on the Atlantic coast of Nova Scotia, 10 miles to the westward of White Haven.

During the season of 1911, the work under contract to the Atlantic Dredging Co. (the improvement of the harbour by deepening to 10 feet at extreme low water at the entrance and by increasing the width of the channel and basin, and deepening inside to 8 feet at extreme low water, involving the removal of 81,000 cubic yards of material, measured in place), was in progress from August 18 to January 5; one dredge, the *Dundonald,* working from August 18 to December 16, and another, the *Quincy,* from November 27 to January 5.

The quantity of material removed—mud, gravel, stone and boulders—was 38,659½ cubic yards, of which 37½ cubic yards were boulders of over 2 cubic yards.

LEITCHE'S CREEK.

Leitche's creek, Cape Breton county, is a settlement at the mouth of a small stream emptying into the head of the northwest arm of Sydney harbour. It is a station on the Intercolonial railway, 7 miles from North Sydney and 9 miles from the city of Sydney.

On February 17, 1911, a contract was entered into for the construction of a wharf in the sum of $5,582.

The work of construction was commenced on August 5, 1911, and was completed on January 23, 1912.

The wharf is 324 feet in length and 20 feet in width, extending to 8½ feet at low water; is a block and span structure consisting of a shore abutment and 8 blocks, all 20 by 20 feet, with connecting spans 18 feet wide. The abutment and blocks are built of round timber, laid open-faced, creosoted to half tide, fully ballasted and fendered, and the three outer faces of the outer block are close-sheathed between the fenders.

The expenditure for the fiscal year 1911-12 was $5,880.12.

LEONARD'S COVE.

Leonard's cove, Annapolis county, is a slight indentation in the coast line of the east side of the Bay of Fundy, 2½ miles east of Parker's cove. The population comprises about 100 people, engaged in fishing and farming.

To afford some measure of protection to the fishing boats, the department in 1911-12, spent the sum of $626.41 in beginning the construction of a breakwater. The work so far as it has gone is 50 feet long, 20 feet wide and from 5 to 10 feet high. It was built, though not quite completed, in the month of October, 1911.

In the month of March, 1912, the sum of $651.57 was expended in the purchase of timber for the completion of the breakwater. The total expenditure in 1911-12, was $1,277.98.

LISCOMB HARBOUR.

The harbour of Liscomb and Little Liscomb, Guysborough county, are on the Atlantic coast of Nova Scotia, 58 miles to the westward of Cape Canso.

A contract was entered into on August 3, 1910, for the reconstruction and extension of the Hemlow wharf at Little Liscomb, for $2,200.

The work under contract included: the removal of old block and span work and the construction of new block and span work, 52 feet in length, and of a pile extension, 69 feet in length and 20 feet in line of work by 40 feet.

A cribwork block was constructed in place of 6 piles (three of the four piles in each of two bents) which could not be driven.

Work was commenced on August 1, and completed October 22, 1911.

The total expenditure for the fiscal year was $2,984.68.

LITCHFIELD.

Litchfield, Annapolis county, is a fishing and farming settlement on the south coast of the Bay of Fundy, 14 miles north-east of Digby gut. Within a radius of a mile is a population of about 150 people.

A breakwater was begun by the department in 1904-5, and it was completed and extended in the three following years. Its total length is now 230 feet, width 20 to 25 feet and height 8 to 18 feet.

In 1910-11, the sum of $1,202.47 was expended in the purchase of timber for a further extension.

In 1911-12, the sum of $3,415.05 was expended. $1,626.84 in building an extension to the breakwater, 60 feet long, 31 feet wide and from 18 to 20 feet high; and $1,788.21 in purchasing timber for a further extension of 80 feet in length. The 60-foot extension was begun on August 15 and suspended, but not quite completed, on November 10, 1911.

LITTLE ANSE.

Little Anse, Richmond county, is a small boat harbour on the eastern side of Petit de Grat island, which lies to the eastward of Madame island, off the southern coast of Cape Breton island.

Plan and specification for the construction of a breakwater off Birch point on the northern side of the entrance to Little Anse, for the protection of the anchorage, were prepared and submitted during 1910-11.

The sum of $20,000 was voted for 1911-12, for the construction of this work. Tenders were called and on September 21, 1911, a contract was entered into with Mr. Thomas Morrison for the construction of the breakwater, for the sum of $21,500.

The necessary materials were procured during the fiscal year, but the work of construction was not begun up to March 31, 1912.

The work under contract is to be 600 feet in length and will extend to 12 feet at low water, and will consist of a stone approach, 80 feet long and 20 feet wide, and of a round timber cribwork extension with creosoted timber substructure, 520 feet in length, 20 feet wide for a distance of 400 feet and 24 feet wide for the remaining distance. The cribwork is to be filled in solidly with ballast, and its seaward face and outer end are to be close-sheathed.

The expenditure for the fiscal year 1911-12, was $262.58.

LITTLE BRAS D'OR.

The Little Bras D'Or channel, Cape Breton county, is a narrow and winding passage on the eastern side of Boularderie island, connecting St. Andrew's channel, an arm of the Bras d'Or lakes, with the Atlantic entering the latter on the eastern coast of Cape Breton island, at a point about 5 miles to the northward of the entrance to Sydney harbour.

The passage is about 5 miles in length, and has a width averaging 600 feet and a depth of from 3 to 4 fathoms, excepting at its entrance from the Atlantic, where it is obstructed by a bar, which carries but 7 feet at low water.

The sum of $12,000 was voted for the construction of a breakwater extending from the mainland to the eastern side of and along the edge of the channel to prevent the sand drifting into the harbour inside the bar.

Plan and specification for the construction of the breakwater, estimated to cost $11,500, were prepared and submitted, and tenders were called but the work was not let.

The proposed breakwater is to be 360 feet in length, with an 'L' 100 feet in length and 20 feet in width, and is to consist of round timber crib-work with creosoted timber substructure, fully ballasted and fendered, and the seaward faces are to be close-sheathed.

Dredging.

During 1910-11, the government dredge *Cape Breton* commenced the dredging of a channel through the bar, about 2,400 feet in length, 120 feet wide at the bottom and 20 feet at low water, to permit the passage at all times of tide, of vessels and steamers engaged in the coal carrying trade from newly opened coal mines at the inner end of the passage, and the amount of work done during that year consisted of the dredging of a cut, averaging about 40 feet in width, 2,400 feet in length, and to an average depth of about 19 feet at low water, involving the removal of about 60,100 cubic yards, scow measure, of sand, mud and gravel.

During the year ended March 31, 1912, the same dredge was engaged from July 25th to September 13th, 1911, working during 28 days, and removing 35,400 cubic yards, scow measure, of mud and gravel, and made about 40 feet wide, 2,400 feet long, and to a depth of about 20 feet, thus widening the channel to about 80 feet throughout its whole length.

The work to be done to complete the channel to a width of 120 feet as proposed, is the removal of 42,000 cubic yards in place, or allowing 30 per cent for expansion, 54,600 cubic yards in scow.

LITTLE HARBOUR (LOWER L'ARDOISE).

Little harbour, Lower L'Ardoise, Richmond county, is situated on the Atlantic coast of Cape Breton island, about 9 miles to the eastward of the entrance to Lennox passage, and about a mile to the southward of L'Ardoise breakwater.

The sum of $2,200 was voted in 1911-12, for the construction of a small breakwater to protect the boat landing beach, for the benefit of the fishermen, and five-twelfths of the vote was authorized for expenditure by day labour.

Materials to the extent of $711.06 were procured when on October 29, 1911, instructions were received to postpone the construction of the work.

The proposed work will be 175 feet in length and 15 feet in width, and is to consist of native round timber open-faced crib-work, filled in solidly with ballast, and will extend to about one foot below low water springs, which rise here 5 feet.

LITTLE RIVER.

Little River, Digby county, is situated on St. Mary's bay, or the interior side of the peninsula known as Digby neck; it is about 5 miles north-east of Petit passage and about 25 miles by public road from the town of Digby. Within a radius of about 3 miles is a population of about 400 or 500 people, dependent for the most part on the fisheries, but doing also some small farming. An establishment at the place for the canning and curing of herring and haddies has an annual output of about $8,000. Small steamers plying between Weymouth, Meteghan, Yarmouth, St. John, N.B., and several little ports on Digby neck, call about four times a week during the year. The present steamboat landing is a small private and inadequate wharf, having little or no water at its face at L.W.O.S.T., and the need of better accommodation has long been felt.

In November, 1910, a contract was awarded to Leo Melanson for the construction of a breakwater wharf for the sum of $14,900. Work was begun on the 8th of May, 1911, and finished on the 10th of October, 1911.

The structure is 150 feet long, 30 feet wide and from 12 to 36 feet high, substantially built of crib-work, filled with stone ballast and provided with a break on the seaward side 4½ feet high. From the bottom to 5 feet above L.W.O.S.T., the whole of the timber is creosoted. Above its level it is of native timber, untreated. Owing to scour, caused by the undertow set up by the work itself, the contractor, in order to bring the breakwater up to contract height, was obliged to build a greater quantity of crib-work than the plan showed and for this he was paid an extra amount of $977.45.

In 1911-12, there was expended the sum of $891.18 in building a road approach from the end of the public road at the old private wharf to the new breakwater, a distance of 300 feet. This piece of road had to be partly blasted out of the side hill rock, and for its whole length walled up on the beach with a vertical wall from 3 to 6 feet high.

The total expenditure for the fiscal year 1911-12, is $17,151.13.

LITTLE TANCOOK.

Little Tancook, Lunenburg county, is an island situated directly to the eastward of Great Tancook island, in Mahone bay. It has a population of 20 families, all engaged in fishing. The island is well situated for fishing purposes and, with Great Tancook island, forms one of the most thriving districts on the Atlantic coast.

During the year 1911-12, the sum of $23,049.27 was expended in the construction of a breakwater for the protection of fishing boats. The completed work is 560 feet in total length, 20 to 25 feet in width and from 6 to 27 feet in height.

The work was begun under contract in April and completed on October 31, 1911.

LIVINGSTON'S COVE.

Livingston's Cove, Antigonish county, is situated on the southern shore of Northumberland strait, about 2 miles southwest of Cape George.

For the purpose of affording shelter to fishing boats of the district and a landing place for steamers and small vessels, a pier extending to 9 feet at L.W.S. was completed by the department in 1903.

The work is 312 feet in length, and is approached by a road, cut through the clay bank, 105 feet in length. The pier is a continuous structure and consists of a shore abutment with stone retaining walls, 30 feet long and 18 feet wide on top; of a crib-work block, 80 feet long and 19 feet wide, and of a crib-work extension, 202 feet in length and 24 feet in width, with an 'L' on the southern side of the outer end, 24 feet by 24 feet.

The crib-work is constructed with native square timber, laid with 7-inch opening, is fully ballasted and fendered, and the northern or seaward face, the outer end and the southern face of the 'L' were close-sheathed with 6-inch hardwood plank.

Contrary to expectations, it was found that the teredo was injuring the substructure of the work, and in order to prevent serious damage, the outer 20 feet of the seaward face of the work, its outer end, the southern and inner faces of the 'L' and the inside face, for a distance of 120 feet from the 'L,' were close-piled with creosoted timber piling, and a stone talus composed of large quarried stone and extending from high-water mark with a slope of about 3 to 1, was placed along its outer end.

In 1910-11, the sum of $4,302.07 was expended in repairing the approach to the breakwater and in the purchasing of all the creosoted timber and part of the native timber required in the construction of the proposed extension to the outer end, 24 by 80 feet in line of work, extending to 13 feet at L.W.S.

During the fiscal year 1911-12, the sum of $1,124.42 was expended in procuring the balance of native timber and ballast required in constructing the proposed extension to the breakwater.

Work was in progress May 1 to 6, November 10 to 27, and February 10 to 22.

LONG POINT.

Long point, Craigmore, Inverness county, is on the eastern shore of St. Georges bay, about 15 miles to the southward of Port Hood, and 8 miles to the northward of the entrance to the Gut of Canso.

For the purpose of improving the landing, to the seaward of the point, and for the better protection of fishing boats, during 1904-5-6, a breakwater 215 feet long and 20 feet wide, of round native timber was constructed.

Owing to the shoaling up of the sheltered area, it was decided to extend the breakwater, and towards that end the sum of $5,000 was voted in 1911-12.

Plan and specification for the proposed extension, estimated to cost $10,100, were prepared and submitted, tenders were called and an order in council was passed authorizing the acceptance of the tender of Mr. A. D. McIsaac, of Port Hood, for $7,995, but instructions were afterwards issued not to take any action in the matter.

The proposed extension is to be 300 feet long and 20 feet wide, and is to consist of round native timber crib-work fully ballasted and close-sheathed on all outer faces.

LOUISDALE.

Louisdale, Richmond county, is a small village on the northern side of Lennox passage, about half a mile from Grand Anse station, on the Cape Breton railway.

The sum of $3,000 was voted in 1911-12 towards the construction of a public wharf at the head of the harbour, for the accommodation of the inhabitants.

Plan and specification for the construction of the wharf, estimated to cost $4,400, were prepared and submitted; tenders for its construction were called and received, but the work was not let.

The proposed work is to be 383 feet in length and 20 feet in width, extending to 10 feet at low water, with an 'L,' 20 by 20 feet, and will consist of creosoted timber pile-work.

LOUIS HEAD.

Louis head is situated at the head of the mouth of the Sable river at a distance of about 5 miles from Lockeport station. It has a population of about 350 people who are practically all fishermen. A few are engaged in rough farming. There are about 35 fishing boats drawing from 3 to 4 feet of water, the greater number of which are equipped with motor power. This number would be materially increased and larger boats used, if better facilities for anchorage were afforded them.

The present breakwater was built in 1892; it is 150 feet long, 20 feet wide on top with a batter of rip-rap on the outside. It is composed of continuous crib-work, sheathed on the outside and having a height of 23 feet at the outer end. Besides this, for its entire length, there is a timber break, 4½ feet high, built of 10 by 12 timbers laid one upon the other, separated on the outside by 10 by 12 posts and on the inside by heavy timber knees by which it is fastened to the main structure. The timber on the top of this work required renewal.

The structure also requires extension, as the sand is now being swept around the end of the present work and is gradually filling up the anchorage. The proposed extension would be 65 feet in length, and would be constructed in a manner and character similar to that of the present work, and would have a height of 25 feet at the outer end. For the purpose of both extensions and repairs, the sum of $4,100 was voted during the last fiscal year, but only $221.11 was expended, this being paid for a portion of the material required; it is expected that the work will be satisfactorily performed during the coming season. Spring tides rise 7 feet, neap 4½ feet.

LOWER EAST PUBNICO.

Lower East Pubnico, Yarmouth county, is a thrifty village of some 300 people, situated on the east side of Pubnico harbour, near its mouth, 35 miles by rail, or road, from Yarmouth, and about 25 miles in an air line southeast.

In 1911-12, the departmental dredge *Canada* removed 11,240 cubic yards of muddy sand in dredging a channel from a private wharf to the main channel. The dredged area being 400 feet long, 100 feet wide, and to a depth of 10 feet below L.W.O.S.T. Work was begun on June 21 and finished on July 15, 1911. ,

LOWER WEST PUBNICO.

Lower West Pubnico, Yarmouth county, is a thrifty and thickly populated fishing district, situated on the west sied of Pubnico harbour, from 30 to 35 miles south-east from Yarmouth.

This work is fully described at page 38, Part IV., Annual Report, 1910-11.

In 1911-12, the sum of $210.79 was expended in repairs to the floor of the wharf, but all the necessary repairs were not completed.

MABOU BRIDGE.

The village of Mabou, Inverness county, is on the northern side of Mabou river, where it is crossed by a highway bridge, at the head of navigation, 4 miles from its

entrance into the Gulf of St. Lawrence, and is a station on the Inverness Railway and Coal Company's road.

During 1904-5-6-7, a pile wharf, 205 feet in length, 50 feet in width over the inner 50 feet and 20 feet in width for the remaining 155 feet, was constructed by the department immediately below the bridge, for the accommodation of vessels and steamers.

It having been found that the wharf was too small to accommodate the traffic, the sum of $2,000 was voted in 1911-12, to widen the narrow part of the wharf and to extend it a distance of 75 feet.

Instructions were received to expend, by day labour, five-twelfths of the vote, but as plans and specifications for the proposed work had to be prepared and they could not be attended to at the time, owing to more pressing work, nothing was done in the matter, excepting that the sum of $190.58 was expended on urgent repairs to the covering of the old wharf.

MABOU HARBOUR.

Mabou harbour, Inverness county, is on the west side of Cape Breton island, 6 miles north-east from Port Hood.

The entrance was formerly at the southern extremity of a range of hills and by an intricate channel, obstructed by a bar over which there was a depth of only 4 feet at extreme low water.

The opening of the new channel through the sand hills, at their northern extremity, was undertaken in 1872. A pier, 835 feet in length on the southern side of the new channel, was completed in 1876, and the same year the old channel was closed. Expenditures were made nearly every year from 1876 until 1899 in dredging; in repairs to the pier; the construction of brush and stone works on the southern side, and of protection work on the northern side of the channel:

On completion of work undertaken in 1908-9, the works included:—

On the south side: the remains of a pier 835 feet in length and 20 feet in width, founded in about 12 feet at extreme low water, sloping from about 10 feet below extreme low water, at the face, to 2 feet above extreme low water at the back.

A brush and stone work, of various widths, extending outwards from the outer end of the pier about 1,600 feet, the inner end of which was 8 feet above, the outer end 5 feet below, low water.

Brush and stone work at the back of the pier, 800 feet in length, 10 to 12 feet in width on top, and 8 feet in average height.

Brush and stone work 330 feet in length, from 1 to 5 feet above high water, closing the former entrance.

On the north side, 5 pile and brush groynes, four of which are from 75 to 85 feet in length, and one 45 feet.

In 1903, the minimum depth at extreme low water, over the bar, about 600 feet outwards from the head of the pier, was 6 feet 3 inches. In July, 1906, the depth over the bar was increased to 16 feet according to report on dredging in 1906-7. This depth had decreased to 13 feet in November, 1907, and to 9 feet in July, 1908.

During the year 1910-11, the brush and stone work, which extends outwards from the outer end of the pier, was raised over a distance of 370 feet from its inner end, and during 1911-12, the sum of $4,166.66 was expended by day labour in the extension of the work for a distance of 135 feet.

The new work consists of a brush and stone core up to high water springs, 12 feet wide on top with sides sloping ½ to 1, and a talus and covering of heavy quarried stone 9 feet wide at a height of 3½ feet above high water springs, with sides sloping 2 to 1, and top rounded off to a height of 4½ feet above high water springs.

MAIN-A-DIEU.

Main-a-Dieu, Cape Breton county, is a small harbour on the eastern coast of Cape Breton island, 10 miles to the northward of Louisburg. It is open to the south, but is sheltered from the direct action of the sea by Scaterie island and by reefs in the bay and partially from a heavy undertow, thrown in during easterly gales, by a breakwater, built in 1881-2-4, extending from Burke's point, on the eastern side of the entrance, 250 feet. A breakwater built on the western side of the harbour in 1903-4, extending 230 feet in from 6 inches to 2½ feet at extreme low water, has had the effect of sheltering a portion of the foreshore only, and of rendering the anchorage less safe than it was prior to its construction.

The sum of $17,700 was voted for expenditure during 1911-12, on the construction of a wharf extending from near the outer end of the eastern breakwater, 246½ feet to 14 feet at extreme low water, and for a roadway over the breakwater.

As the construction of a wharf on the eastern side of the harbour would not suit the inhabitants on the west side, and would require the construction of a long and hilly road, and it is asked that the wharf be built at the head of the harbour, where it would be convenient to all and where there would not be any road to build, nothing was done in the matter of preparing plans for the proposed wharf off the breakwater, but a survey for a wharf at the head of the cove was made and a report on the construction of a wharf there, estimated to cost $11,200, was submitted, under date January 17, 1912.

No work was done during the past fiscal year, awaiting the decision in reference to site.

MAITLAND.

The village of Maitland, Hants county, with a population of about 1,500, is situated at the entrance of the Shubenacadie river, which empties into the Basin of Mines, a large estuary on the Bay of Fundy.

The department, between 1873 and 1876, spent $6,342 in the construction of a public wharf, and an additional sum of $2,142.76 has since been expended in repairs to this work.

During the year 1911-12, the sum of $142.11 was expended in the purchase of planking and material for much needed repairs to the top of the wharf, which will be undertaken under the 1912-13 appropriation.

MARBLE MOUNTAIN.

Marble mountain, Inverness county, is a thriving settlement on the north side of West bay, an arm of the Great Bras d'Or lake, about 14 miles to the eastward of the head of the bay. The place was of little importance until ten years ago, when the Dominion Iron and Steel Company acquired extensive lime-stone quarries there and commenced operations on a large scale. They employ a large number of men and ship the output of their quarries to Sydney, to be used in connection with their smelting works.

During 1908-9, the department constructed a public wharf extending to 15 feet at low water for the accommodation of vessels and steamers calling.

The sum of $4,000 was voted for 1911-12 towards the extension of this wharf. Plan and specification for the proposed work, estimated to cost $7,000, were prepared and submitted. Tenders were called but none were accepted.

The proposed extension will consist of blocks and spans, 86 feet in length and 40 feet in width, with an 'L' on the southern side of the outer end, 40 feet long and 30 feet wide, besides the construction of a warehouse 60 feet long and 20 feet wide. The depth of water at the outer end of the extension will be about 23 feet at low water.

MARGAREE HARBOUR.

Margaree harbour, Inverness county, at the mouth of the Margaree river, is on the west coast of Cape Breton island, about 30 miles northeast of Port Hood. It had a narrow intricate channel through which the tide ran at the rate of four knots, and its entrance was obstructed by a bar of shifting sand over which there was, at times, a depth of only 5 feet at extreme low water.

Expenditures have been made by the department in the construction and maintenance of channel protection and improvement works on the west side of the entrance, and in the construction of beach protection work on the east side.

The works on the west side include works built by the provincial government and extended by the department, and work of improvement undertaken in 1900-1.

The depth at extreme low water in the channel opposite the west side protection work, was found in 1909, to be nowhere less than 10 feet, and over a bar outside, not less than 9 feet.

During 1910-11, the sum of $4,200.45 was expended in general repairs to the breakwater and in constructing a 24 by 24 foot block to protect the outer end.

On March 22, 1911, a contract was entered into for the construction of a 100-foot extension to the breakwater for the sum of $5,300 and the work was satisfactorily completed on August 11.

The sum of $10,000 was voted for expenditure during 1911-12, towards the extension of the shear-dam, a distance of 295 feet, to connect it with the main breakwater, for the purpose of straightening the channel, and instructions were received to prepare plan and specification for this extension, which was estimated to cost $22,000.

A survey made showed that the extension could not be constructed as suggested, as it would have rested on a very uneven sand bank, certain to be acted upon by the strong current and cause the uneven settlement of the work. To ensure stability to the structure, the foundation will have to be dredged.

Out of the amount voted for 1911-12, the sum of $249.12 was expended in slight repairs to the breakwater.

The total expenditure for the fiscal year, 1911-12, is $5,767.20.

MARGAREE ISLAND.

Margaree island, Inverness county, is situated in the Gulf of St. Lawrence, 2½ miles off the western coast of Cape Breton island and 27 miles northeast of Port Hood.

A wharf on the eastern side and near the southern extremity of the island, commenced in 1899-1900, and completed in 1901-2, is 100 feet in length and 20 feet in width, including 28 feet of crib-work, the southern side of which has been strenghtened by the construction of a concrete wall 18 feet in length, 4 feet in width and 7 feet in average height, and a crib-work block, 72 feet in length. During 1909-10, the sum of $1,725.90 was expended in reballasting the adjoining crib-work.

During 1910-11, the sum of $245.54 was expended in paying outstanding accounts for materials obtained during 1909-10, and in repairing and reballasting the outer 40-foot block.

During the year 1911-12, the sum of $665.76 was expended in repairs to the outer end of the breakwater, which had been badly wrecked during a severe gale in the previous year; the repairs consisting in raising, reballasting and covering the outer block and in placing a stone talus on the western side of the inner end of the work.

The depth at extreme low water at the outer end of the wharf is 5½ feet.

Spring tides rise 4 feet.

The expenditure on this work for the fiscal year ending March 31, 1912, is $666.76.

MARGAREE RIVER.

Margaree river, Inverness county, is a large stream on the west side of Cape Breton island, flowing through extensive meadows to the Gulf of St. Lawrence.

Works for the protection of intervale lands, undertaken in 1907-8, and continued during the two following years, include: upper and lower shear dams in the Ross Ingraham settlement, North East Margaree, of piles and brush 15 feet in width, respectively; 420 feet in length and 6½ feet in height; 250 feet in length and 5 feet in height; work of brush and stone at Doyle's Bridge and Deagle's interval, 5 feet in height respectively, 320 feet in length and 8 feet in width and 150 feet in length and 10 feet in width on top.

During 1909-10, the sum of $245.56 was expended in completing the lower dam in the Ross-Ingraham settlement.

The sum of $2,000 was appropriated for expenditure during 1911-12, for the construction of shear-dams on this river, and of this amount, the sum of $1,999.97 was expended in the reconstruction of a portion of the upper shear-dam in the Ross-Ingraham settlement and in its extension westward for a distance of 75 feet.

The expenditure during the fiscal year 1911-12, is $2,093.85.

MARGARETVILLE.

Margaretville, Annapolis county, is the most important village on the south shore of the Bay of Fundy, between Digby gut and Scott's bay; it is 42 miles northeast from the former, 36 miles south-west from the latter, and 9 miles north of Middleton, an important station on the Dominion Atlantic railway. It has a population of 500, engaged in fishing and farming.

A pier was begun in 1837 by the provincial government, and subsequently extended a length of 471 feet. The work was taken over by the Public Works Department in 1871, since which time it has had frequent repairs and renewals, a full history of which will be found in the report of the department for the year 1907-8.

In 1908-9, the sum of $2,581.13 was expended in building an extension to the eastern breakwater begun in 1902-3, 50 feet long on the west side, 40 feet long on the east side, from 32 to 40 feet wide and from 22 to 25 feet high.

In 1909-10, the sum of $288.04 was expended in completing the work. The sum of $486.02 was also expended in repairs to the west breakwater, which had been damaged by heavy seas in the late autumn and winter.

Spring tides rise about 32 feet.

In 1911-12, the sum of $1,981.02 was expended, $99.34 in April, 1911, in petty and emergent repairs to the floor of the west breakwater, and the removal of a small quantity of gravel, which obstructed the schooner berth. $397.26 was expended in further repairs and renewals to both breakwaters and $1,484.42 for the purchase of timber for further repairs and extensions.

MARIE JOSEPH.

Marie Joseph, Guysborough county, is situated on the Atlantic coast of Nova Scotia, about 60 miles to the westward of Cape Canso, and about 1 mile east of the boundary line between the Counties of Guysborough and Halifax.

The estimated cost of purchasing the wharf and property of Mr. Pye and raising and extending the wharf to 10 feet at L.W.S. is $2,800 (cost of property, $1,000.)

As the amount voted was insufficient to complete the work proposed, no expenditure was made during the fiscal year.

MARION BRIDGE.

Marion bridge, Cape Breton county, spans the Mira river, about 12 miles above its entrance into Mira bay on the eastern coast of Cape Breton island.

The river is navigable and during the summer season small steamers are engaged in passenger and freight traffic, the landing being effected at small and inconvenient wharfs near the Albert and Marion bridges, or by boats.

The sum of $1,600 was voted in 1911-12, for the construction of a small landing wharf at Marion bridge, and instructions were received to proceed with the expenditure of the amount voted, by day labour.

As the land required for site and wharf had not been obtained, and as the owner of the land asked an exorbitant amount for the property required, it was considered advisable not to do anything further in the matter, and no part of the amount voted was expended.

MEAT COVE.

Meat cove, Victoria county, is a small cove on the northern coast of Cape Breton island, about 2 miles south-east from Cape St. Lawrence, the most northern part of the island.

The sum of $3,000 was voted in 1911-12, towards the construction of a wharf. Plan and specification for the same, estimated to cost $13,000, were prepared and submitted, and tenders for its construction were called and received.

An order in council was passed authorizing the acceptance of the tender of D. W. B. Reid, of Halifax, at $13,878, for the construction of the wharf, but later, no action was taken in the matter.

The proposed wharf is to be 260 feet long and 20 feet wide, with an 'L' on the northern side of its outer end, 40 feet long and 30 feet wide, extending to 12 feet at low water, and will consist of continuous cribwork, with creosoted timber substructure, fully ballasted and fendered and close-sheathed on all outer faces.

MELFORD.

Melford, Guysboro county, is a settlement about 4 miles in length on the western shore of the strait of Canso, about 8 miles from Mulgrave.

A contract was entered into on September 1, for the construction of a wharf at Reeve's cove, Lower Melford, for the sum of $5,394.

During the fiscal year 1911-12, the timber required in the construction of the work, under contract, had been arranged for, but up to March 31, 1912, work of construction had not been commenced.

METEGHAN.

Meteghan, Digby county, is situated on the south side of St. Mary's bay, 25 miles north of Yarmouth, 20 miles south of Weymouth, 2½ miles from Meteghan river, and 40 miles south of Digby, the county town. The nearest railway station, on the Dominion Atlantic railway, which lies approximately paralled to the coast, and has its terminus at Yarmouth, is about 7 miles distant. The whole coast of St. Mary's bay, from Digby to Yarmouth, is thickly settled, being in fact almost one continuous straggling village for the whole distance of 67 miles.

Next to Digby and Yarmouth, Meteghan is the most important settlement on the bay shore, having a population of 1,000 engaged in farming, fishing, lumbering and general trade.

The harbour works consist of a breakwater and landing pier, of cribwork, built between 1837 and 1860, by the provincial government and the inhabitants. The pier

is 200 feet long and 20 feet wide. The breakwater 20 to 26 feet wide, runs out a distance of 925 feet from the shore and has a return or 'L' of 85 feet at the outer end, which is 24 feet wide and 30 feet high, standing in from 25 to 27 feet of water, at H.W.O.S.T.

In 1875, at which date the work appears to have been taken over by the department, the breakwater was extended and repaired.

From 1875 to 1906, many expenditures were made by the department in repairs and renewals, of which a full account will be found in the departmental report for 1905-6.

In 1909-10, the sum of $300 was expended in emergent repairs to the covering, stringers and guard timbers of the outer end of the breakwater, which had been damaged by recent storms.

In 1911-12, the sum of $2,916.86 was expended in taking down and rebuilding a portion of the ancient public wharf, 50 feet long, 30 feet wide and 21 feet high. Work was begun on September 1, 1911, and closed down for the season on January 31, 1912. The sum of $2,013.39 was also expended in the purchase of timber for the completion of the public wharf.

METEGHAN RIVER.

Meteghan river, Digby county, empties into the Bay of Fundy, at the mouth of St. Mary's bay, almost directly opposite Grand passage, between Long island and Brier island. The village, at the mouth of the river, is 20 miles south of Weymouth, 28 miles north of Yarmouth, and 2½ miles north of Meteghan or Meteghan cove. The population of the village is about 400, engaged in fishing, farming and lumbering. The nearest railway station, on the Dominion Atlantic railway, which runs parallel with the bay shore, is about 4 miles from the village.

In 1908-9, the sum of $3,000 was expended in building a new northern breakwater-wharf. The work is substantially built of round log crib-work, and is 180 feet long, 20 feet wide and from 6 to 14 feet high.

In 1911-12, the sum of $1,638.77 was expended in building an extension to the north breakwater, 70 feet long, 25 feet wide and from 10 to 14 feet high. It was begun on August 22, and finished on October 16, 1911.

MIDDLE ISLAND

Middle island, Lahave islnads, Lunenburg county, is the second largest island of the group bearing this name, lying on the eastern side of the entrance to Lahave river. The island is used by 10 to 20 fishermen constantly. During the year 1911-12, the department expended the sum of $393.63 in dredging, by hand, the little boat harbour on the northern side of the island. Work was begun July 28 and completed October 23, 1911.

MIDDLE RIVER (LOWER).

Middle river, Victoria county, is a large stream emptying into Indian bay, on the northern side of St. Patrick's channel, an arm of the Bras d'Or lakes.

About 5 miles above its mouth, the river flows through alluvial lands, easily acted upon by the strong currents, particularly during freshets and, by opening up new channels, caused great loss of valuable lands.

Since 1903, three shear-dams were constructed along the river at this point, for the purpose of straightening and confining the course of the river, and the works proved successful as far as they went. At the end of the year 1908-9, the lower dam was 1,042 feet, the middle 220 and the upper dam 600 feet in length. All these dams

consist of pile-work, filled in solidly with brush and stone, laid in alternate layers and protected on the channel face with close-sheathing.

During 1909-10, the sum of $1,100 was expended in constructing a low pile-brush and stone dam, 250 feet in length and 10 feet in width in front of the deepest portion of the upper dam to prevent undermining of the gravel bottom, and during 1911-12, the sum of $493.82 was expended in repairs to the low dam constructed during 1909-10.

MIDDLE RIVER (UPPER).

Upper Middle river, Victoria county, is a settlement on the Middle river, a large stream emptying into Indian bay, on the northern side of St. Patrick's channel, an arm of the Bras d'Or lakes, and is situated about 11 miles from and above the mouth of the river.

For the purpose of deflecting the course of the river, above the footbridge, where it threatened to leave the old and cut a new channel through valuable intervale lands, during 1907-8-9, the sum of $2,185.15 was expended in the construction of a shear-dam, 400 feet in length, the upper 100 feet consisting of brush and stone and the lower 300 feet of three rows of pile-work, 15 feet wide, filled in solidly with brush and stone and sheathed on the channel face with plank driven into the bottom.

During 1909-10, the sum of $401.02 was expended in the construction of a short dam, above the old dam, to prevent the river from cutting in behind it. The new dam is 90 feet in length, of which the upper end, for a distance of 30 feet, is of brush and stone, and the lower 60 feet of pile-work, filled in with brush and stone.

During the year ended March 31, 1912, the sum of $409.95 was expended in the construction of an extension 90 feet in length to the upper dam, of piles, brush and stone work.

MORDEN.

Morden, Kings county, formerly called French Cross, is a small fishing and farming village of about 150 people, situated on the south shore of the Bay of Fundy, 50 miles north-west of Digby gut, and 9 miles from Aylesford station, on the Dominion Atlantic railway.

The pier, or breakwater, which is the most westerly in Kings county, was begun in 1846, at the joint expense of the inhabitants and the provincial government. It is built of round log crib-work, filled with ballast and close-sheathed on the seaward side and outer end. It is about 365 feet in length, and varies in width from 28 feet at the shore end, to 45 feet at the outer end, where it is 26 feet in height. It has had many repairs, renewals and extensions, complete details of which are contained in the annual report of 1904-5.

In 1907-8, the sum of $100 was expended in again removing the accumulation of gravel from alongside the breakwater.

In 1908-9, the sum of $236.80 was expended in the repair and renewals of a portion of the covering plank and in the purchase of timber for further repairs and renewals in 1909-10.

In 1911-12, the sum of $381.85 was expended in repairs to the breakwater; 50 feet in length of the seaward face was close-sheathed and four panels were filled with ballast. The work was done in August and September, 1911.

MULGRAVE.

Mulgrave, Guysborough county, is on the western side of the Strait of Canso, nearly opposite Port Hawkesbury and Point Tupper.

A contract was entered into in September, 1911, for the reconstruction and extension of the 'Clancy' wharf at Port Mulgrave, to the northward of the Intercolonial railway terminal, for $3,000. The work under contract includes an extension 142 feet in length extending to 6 feet at L.W.S., consisting of 3 blocks, 18 by 20 feet and a head block 40 by 20 feet in line of work. Spring tides rise 6 feet.

Work was commenced October 5. When operations were suspended for the winter on December 30, it was completed with the exception of the outer block which had not been placed.

The expenditure for the fiscal year 1911-12 is $3,650.93.

McARA'S BROOK.

McAra's brook, Antigonish county, is a small stream entering into the Northumberland strait, 3 miles west of Arisaig.

In 1887, a landing place was made for boats by levelling off a portion of the top of a large rock, and constructing a crib-work approach 75 feet in length. The approach was destroyed in 1890, and re-constructed in 1891.

During the fiscal year 1911-12, the sum of $680.57 was expended in re-constructing the top of the crib-work approach and placing 6-inch hardwood sheathing along its seaward face and in the construction of a retaining wall and road from the inner end of the crib-work to the top of the bank which has receded about 30 feet since 1891.

Work was in progress November 7 to 30 and December 1 to 13.

McKAY'S POINT (JUDIQUE).

McKay's point (Judique) Inverness county, is on the east side of St. George's bay, 10 miles south of Port Hood and 16 miles north of the northern entrance to the Strait of Canso.

The breakwater at McKay's point, commenced in 1898, and completed in 1900, is 725 feet in length and 20 feet in width, with an 'L' 20 by 20 feet at the outer end, of round timber, laid open-faced with creosoted timber substructure, close fendered round the outer end and 'L' and protected on the seaward side by a talus of stone. The depth at extreme low water, at the outer end, is 6 feet. Spring tides rise 1½ feet.

During the fiscal year 1908-9, the sum of $1,358.99 was expended in cutting down to low water; in reconstructing the outer block, and in placing quarried stone in the talus on the seaward side over a distance of 100 feet, from the 'L' inwards.

The sum of $300 was authorized for expenditure during 1911-12, on repairs to the breakwater and this amount was expended in raising the stone talus along the seaward face of the work, which had been flattened out by the action of the sea.

McKINNON'S HARBOUR.

McKinnon's harbour, Victoria county, is on the northern side of the Great Bras d'Or lake, about 8 miles to the westward of Barra strait, which connects the Great with the Little Bras d'Or lake.

The harbour is about 3 miles in length and from ¼ to ½ mile in width, and carries a depth of from 4 to 6 fathoms, but its entrance, about 300 feet in width, was obstructed by a bar of sand overlying clay, with only 9 feet at low water.

The Newark Plaister Company, of Newark, New Jersey, U.S., acquired the privilege of quarrying gypsum over a large territory in the vicinity of the harbour, and constructed a pile shipping pier extending to 20 feet at low water within the entrance of the harbour, and as the gypsum is shipped to the United States, in steamers drawing from 17 to 19 feet when loaded, it was decided to dredge a channel 150 feet wide to a depth of 20 feet below low water, across the bar at the entrance.

The contract was let to the W. J. Poupore Dredging Co., Limited, of Montreal, and their dredge, the *Prince Guy,* commenced operations there on August 20, 1908, and continued until November 20, following, when work was suspended owing to lack of funds to complete.

During that period, 38,365 cubic yards, scow measure, of material were removed, leaving a channel about 130 feet in width with a minimum depth of 18½ feet.

During the fiscal year ended March 31, 1912, the government dredge, *Cape Breton,* was there from May 15 to June 7, 1911, working part of seven days removing some 11,050 cubic yards, scow measure, of clay and sand, and completing the channel to the full width and depth proposed.

MCNAIR'S COVE.

McNair's cove, Antioonish county, is situated on the western side of St. George's bay, about 2 miles to the southward of Cape George.

This work is fully described at page 41, part IV, of annual report for 1910-11.

During the fiscal year 1911-12, the sum of $1,912.86 was expended in re-constructing a break on the seaward face of the work, 125 feet in length; in removing ballast on hand to a place of safety, and in procuring additional ballast and timber required in the construction of the proposed extension of the 'L' to be 40 by 25 feet in line of work, built of round timber crib-work with creosoted substructure and sheathed on the seaward face with 5-inch creosoted and hardwood sheathing; depth at outer end 12 feet. Spring tides rise 4½ feet.

Work was in progress in September 14 to 18, December 1 to 9, and February 15 to 19.

Dredging.

During part of the season of 1911, August 14 to September 16, the dredge *George McKenzie* was engaged in deepening the sheltered area on the inner side of the public wharf. The area dredged over was 200 feet in length and 150 feet in average width. The depth obtained, at extreme low water, was 8 feet over the outer 100 feet and from 8 to 3 feet over the inner 100 feet. The quantity of material, sand and gravel removed was 3,700 cubic yards, measured in place, or 3,985 cubic yards, scow measurement.

The expenditure for dredging amounted to $1,193.64.

MCLEODS HARBOUR.

McLeods harbour, Lunenburg county, is situated on the eastern side of Green bay, about 3 miles south of Petite Rivière. It is a most important fishing harbour, being well situated and affording excellent shelter for boats with every facility for prosecuting the fishing industry. The harbour is from 100 to 150 feet wide and 600 feet in length. It is protected on its eastern side by a ridge of rocks and beach. It is used during the summer months by some 30 or 40 fishermen.

Owing to an accumulation of sand and gravel at the entrance to the harbour, considerable difficulty was experienced in entering and leaving at low tide.

During the fiscal year 1911-12, the sum of $1,000.55 was expended in dredging, by hand, the mouth of the harbour and in the construction of a small crib-work protection to the beach on its eastern side.

Work was begun June 12 and completed September 30, 1911.

M'RITCHIE'S WHARF, ENGLISHTOWN.

McRitchie's wharf, Englishtown, Victoria county, is situated on the southern side of, and immediately inside the entrance to St. Ann's harbour, a capacious harbour at the head of St. Ann's Bay, on the eastern shore of Cape Breton island.

It is a private wharf, but its use is free to the public, and being about half a mile from the public wharf, a great deal of the freight by the steamer *Aspy*, which plies twice a week between the Sydneys and the north shore, calling at ports in this harbour, is landed here.

The government dredge, *Cape Breton,* operated during the summer of 1911 on the bar at the entrance to the harbour, but owing to the heavy surf, she was not able to work there constantly, and being idle at times, she was permitted to work 1½ days deepening the approaches to this wharf, and removed 1,700 cubic yards of stone, clay and sand.

NEIL'S HARBOUR.

Neil's harbour, Victoria county, is situated on the eastern shore of Cape Breton island, about midway between Ingonish and Aspy bays.

The harbour is at the entrance of a small bay, open to the south and south-east and extending inland about half a mile. It is sheltered from the north and east by Neil's head (a rock promontary frop 10 to 20 feet above the level of high water springs), but not safe during gales from the south and south-east.

This work is fully described at page 45, Part IV, of the annual report of 1910-11.

The sum of $500 was voted for expenditure during 1911-12, for completing the grouting of the stone in the talus, commenced during 1909-10, but owing to the lateness of the season in which the instructions were received, it was found impossible to do the work required, and of the amount voted the sum of $207.10 was expended in necessary repairs to the covering and the cap-timbers of the breakwater.

NEW EDINBURGH.

New Edinburgh, Digby county, is a village of about 200 people, engaged in fishing and farming, situated on the west side of the mouth of the Sissiboo river, 3½ miles below Weymouth bridge.

In order to provide a shelter for the fishing fleet, comprising from thirty to forty boats, the department in 1911-12 built a breakwater at a cost, by contract, of $11,900.

The work, which was begun on June 26, 1911, and finished on December 16, 1911, is 410 feet long, the outer 140 feet in length being 30 feet wide and the inner 270 feet in length 20 feet wide. The height of the wharf, for its outer half, is 21 feet and the inner half from 20 feet to 8 feet. It is substantially built of the usual type of stone-filled round-log crib-work, of native timber, and provided with a break on the seaward face 4½ feet high. Spring tides rise 21 feet, neaps 17 feet.

The expenditure for the fiscal year 1911-12, is $12,292.50.

NEW HAVEN.

New Haven, Victoria county, is an important fishing station at the head of a small cove, on the Atlantic coast of the northern extremity of Cape Breton island, about midway between Ingonish bay and Cape North.

The sum of $1,440 was voted in 1911-12 to repair and extend the crib-work pier, which was constructed by the department during 1893-94, for the protection of a dock cut into the beach, for a landing for fishing boats, and five-twelfths of the amount voted was authorized for expenditure.

When arrangements were completed, it was too late in the season to start the work at New Haven, and no part of the amount authorized was expended during the fiscal year.

NORTH RIVER.

North river, Victoria county, is a large stream emptying into the northern arm of St. Ann's harbour, on the north-eastern coast of the island of Cape Breton.

A pile-wharf was constructed by the department during 1898-99-1900, at Seymour point, on the northern side of the mouth of North river, extending to a depth of 9 feet at low water. It is a port of call for the steamer *Aspy*, which plies twice a week during the season, between the Sydneys and ports in St. Ann's harbour.

The government dredge *Cape Breton* operated during the summer of 1911 on the bar at the entrance to St. Ann's harbour, but as she could not work there every day on account of the heavy surf, she was permitted to work two days in deepening to 10 feet at the outer end of the wharf and in cutting a berth along its northern face 80 feet long, 50 feet wide and to a depth of 10 feet at low water, and the material removed, consisting of hardpan, was 1,800 cubic yards scow measure.

NORTH SYDNEY.

North Sydney, Cape Breton county, is an important town with a population of about 5,500 inhabitants, on the north-western shore of Sydney harbour, about 3 miles from its entrance.

A survey for the construction of a deep water wharf and for dredging alongside, was made in 1910, but as it was found impossible to take proper borings over the area at the time, it was decided to wait for the formation of ice, when careful borings could be made.

The ice formed about the midde of February, 1911, and the borings were made during the latter part of March following, and ledge rock was found underlying the sandy surface, at different depths.

The rock seems to be of a sandy formation, and it may be possible to remove it by dredging, and it is proposed to try it with the dredge *Cape Breton.*

As the proposed wharf is intended to accommodate vessels drawing 24 feet at low water, the berth alongside must have that depth for a distance of at least 300 feet, and if the rock cannot be removed by dredging, the wharf would have to be built to a greater distance; plans and specification cannot be prepared until the question has been definitely settled.

The government dredge *Cape Breton*, from December 7 to 16, 1912, was engaged in trials, to ascertain whether the ledge rock could be removed by dredging. The experiment was not very successful as the dredge was not built for such work, and its machinery could not stand the heavy strain upon it. She worked part of 9 days and broke down several times, and removed 2,775 cubic yards of sand, loose stone and ledge-rock.

Dredging.

Nova Scotia S. & C. Company's Piers.

The company have erected large and convenient shipping piers, both for the shipment of coal and for receiving iron ore. and steamers with a draft of 26 feet can be loaded and discharged at all times of tide.

As better depth was desired to accommodate steamers of greater draught, the government dredge *Cape Breton* was engaged from January 12 to January 25, at the sides of the ore pier, and worked there part of 7 days removing some 2,600 cubic yards scow measure, of sand and stone which were deposited at a distance of 3 miles from the place of operations.

NYANZA.

Nyanza, Victoria county, is a small settlement 7 miles to the westward of the town of Baddeck, and is at the head of Indian bay on the northern side of St. Patrick's channel, an arm of the Bras D'Or lakes.

It is a port of call for the steamers of the Bras D'Or Steamship Company, plying between the Sydneys and Whycocomagh during the season, and is the shipping place for a large and important agricultural district.

The wharf was constructed by the department during 1893-94-95, and widened during 1901-2, is 136 in length and 40 feet in width, it extends to 12 feet at low water, and is constructed of brush, with sides battering 1 in 6, covered with gravel and fendered with hardwood piles.

During 1902-3, a warehouse, 30 by 18 feet, was constructed on the western side of the inner end of the wharf, and during 1905-6, a parcel of land containing about half an acre, was purchased for the purpose of forming a yard for cattle, sheep, &c., while waiting for shipment.

Of the amount voted for 1910-11, the sum of $2,367.04 was expended in repairs to the outer end of the wharf, and in the construction of a creosoted timber pile extension to the wharf, 50 feet long and 40 feet wide, and in completing the same, excepting the placing of covering, cap-timbers and fender piles.

The sum of $600 was voted for this work during 1911-12, and out of this amount the sum of $544.62 was expended in completing the extension commenced during 1910-11, and in reconstructing 20 feet of the top of the outer end of the old work with round timber crib-work.

ORANGEDALE.

Orangedale, Inverness county, is an important settlement on the Intercolonial railway, 30 miles from Mulgrave and 62 miles from Sydney by rail and 25 miles from Baddeck by water. The chief industries are lumbering and farming.

During the fiscal year 1910-11, the sum of $2,972.30 was expended in procuring all the materials, including creosoted timber, required for the construction of a block and span wharf, with creosoted substructure, 163 feet in length, 16 feet in width on top with an 'L' at the outer end 20 by 30 feet. The depth at low lake level along the outer face is 9½ feet.

The sum of $2,000 was voted for 1911-12, to construct by day labour the wharf for which the materials were obtained in the previous year, and as more money was expended during 1910-11 than was expected when the statement of amounts required for 1911-12 was prepared, out of the amount voted the sum of $741.86 only was expended in the construction of the wharf, as described above.

PARKER'S COVE.

Parker's cove, Annapolis county, is a small indentation of the southeast shore of the Bay of Fundy, 15 miles northwest of Digby gut, and 7 miles north of Annapolis, the county town. The population of the settlement is about 250 people, engaged in fishing and farming.

In 1883-84, the department constructed a small crib-work breakwater, 200 feet long, 23½ feet to 26 feet wide on top, and at the outer end 16 feet high, where at high tide there was a depth of about 11 feet of water.

From 1900 to 1908, the department made numerous expenditures, of which a full account will be found in the report for 1907-8.

In 1908-9, the department expended $905.98 in the purchase of timber for the construction of a breakwater on the west side of the little harbour.

In 1910-11, the sum of $2,000 was expended in constructing the work for which timber was bought in 1908-9. The breakwater is 140 feet long on the east side, 120 feet long on the west side, from 22 to 30 feet wide on top and from 8 to 15 feet high.

The sum of $933.66 was also expended in extensive repairs to the east or main breakwater. The upper portion of the angle or elbow, which was badly damaged by heavy seas in the winter of 1909-10, was renewed as to stringers, planks, guard-timber and a few fenders, and 100 feet in length of the shoreward end was rebuilt and raised 1 foot to 3 feet.

In 1911-12, the sum of $1,420.63 was expended in completing the shoreward portion of the western breakwater, begun last year. Work began August 15, and was completed in October, 1911.

PATH END.

Path end, Victoria county, is a small settlement on the southern shore of Cape Smoky on the northeastern coast of Cape Breton island, and is about 6 miles to the southward of the entrance into South Ingonish harbour.

The inhabitants are farmers, but all of them follow the fisheries during the season, and in order to facilitate the landing of their fishing boats, the sum of $249.92 was expended there during 1911-12, in removing several large rocks on the beach, which interfered with the landing, and in forming an inclined landing with them on which to enable fishermen to haul up their boats during stormy weather.

PETIT DE GRAT.

Petit de Grat inlet, Richmond county, lies between Petit de Grat island and the eastern extremity of Madame island. The main entrance is at the southern end from the Atlantic. The northern entrance, from Rocky bay, is obstructed by outer and inner bars, through which passages for boats, at ordinary low water, were opened by the department between 1897-98.

These channels were improved and protected at different times by the department, but as it was found impossible to keep them from filling in with sand, it was decided to abandon the old channel and to open a new one through the beach at a point 300 feet to the eastward of it, and during 1903-4-5, the sum of $4,042.36 was expended in cutting a channel to a depth of 3 feet below low water through the beach, 285 feet in length and 20 feet in width at the bottom, and in the construction of a breakwater, 240 feet long and from 15 to 20 feet in width, on the eastern side of the channel, consisting of native round timber crib-work.

The sum of $2,800 was voted for expenditure during 1911-12, for the extension of the breakwater, and five-twelfths of the amount was authorized for expenditure by day labour, but as plan and specification for the proposed work had to be prepared, and they could not be done at the time, owing to more pressing work, and the season was, later, too far advanced to do any work to advantage, nothing was done in the matter and no part of the amount voted was expended.

Dredging.

During 1909-10, Messrs. Beazley Bros. of Halifax improved, by dredging, the approach to Jean's, Duff's and Comeau's wharfs. Dredging operations were in progress from June 23 to August 6, 1909, and some 10,945 cubic yards of mud and 45¾ cubic yards of rock were removed.

On July 11, 1910, a contract was entered into with The W. J. Poupore Company, Ltd., of Montreal, for dredging 35,000 cubic yards at 55 cents per cubic yard. The contract expired on December 19, 1910, and as no work was done under this contract, it was extended to December 19, 1911.

On May 29, 1911, the dredge *Prince Guy* commenced operations and continued until July 12, removing 6,530 cubic yards of hardpan and small boulders, and as the plant was found too light for the heavy work required, the dredge was dismantled and another dredge, the *Pontiac,* was placed in commission to take her place. This dredge commenced operations on July 31, and continued until August 12, when she was burned down and sank at her mooring. During this period, this dredge removed some 3,900 cubic yards of hardpan.

The total amount of dredging done under this contract, during 1911-12, is 10,431 cubic yards, scow measure, of clay, mud, small boulders and hardpan.

PETITE RIVIÈRE.

Petite rivière, Lunenburg county, is in the centre of a thriving farming and lumbering district, situated about 12 miles south-west of the town of Bridgewater and 6 miles west of Lahave river. The village, which has a population of 500, is situated near the mouth of a small river from which it takes its name. The nearest railway station is 6 miles and the nearest harbour, Lahave, 6 miles distant. A small harbour is formed by the channel of a river which empties into a shallow bay through a sand beach.

From 1905 to the end of the fiscal year 1908, the department constructed a breakwater, 1,220 feet long, the first 900 feet being 16 feet wide and the other 320 feet being 20 feet wide. It is from 5 to 13 feet high and rests on a mattress of brush and stone from 20 to 30 feet wide and about 2 feet in thickness.

During the fiscal year 1911-12, the sum of $340.63 was expended in making necessary repairs to the work, which had settled, owing to the scouring of the sand under the breakwater.

Work was begun October 2, and completed October 6, 1911.

PHINNEY COVE.

Phinney cove, Annapolis county, is a very slight indentation in the general coast line of the south side of the Bay of Fundy, 9 miles east of Parker's cove and 3 miles west of Hampton. The population of the place, within a radius of a mile and a half, is about 150 people, making, roughly speaking, two-thirds of their living by fishing and about one-third by farming. The lack of shelter for the fishing fleet, comprising about 25 boats, being a great drawback to the development of the industry, the department in 1907-08, built a breakwater by contract at a cost of $5,700. The work is 200 feet long, 27 feet wide and from 9 feet high at the shore end to 23 feet at the outer end, where at high water there is about 20 feet of water. The work is substantially built of native timber crib-work, well fendered, bolted and fully ballasted.

Spring tides rise about 30 feet.

In 1910-11, the sum of $499.85 was expended in trifling repairs to the breakwater, built in 1907-08, and in purchasing timber for its extension.

In 1911-12, the sum of $2,736.68 was expended in constructing an extension to the breakwater and in purchasing timber for its completion. Work was begun in the middle of September, 1911, and suspended the end of November.

PICTOU.

Pictou is on the north side of a harbour, on the Northumberland strait, of the same name, 2 miles within the entrance.

Dredging was undertaken at Pictou with the object of improving accommodation for large steamers by deepening on each side of the eastern Intercolonial railway pier, on the east side to 20 feet at L.W.S. over an area of 350 feet in length and 90 feet in width, involving the removal of 11,100 cubic yards, measured in place, and on the

west side to 25 feet at L.W.S. over an area 400 feet in length and 135 feet in width, involving the removal of 12,900 cubic yards, measured in place, of soft mud.

During the season of 1911, the dredge *George McKenzie* was engaged September 25 to November 18 in deepening on the east side of the eastern Intercolonial railway pier to 20 feet at L.W.S. over an area of 300 feet in length and 60 feet in width at bottom. The quantity of material removed was 7,450 cubic yards, scow measurement.

PIPER'S COVE.

Piper's cove, Cape Breton county, is on the north-eastern end of the Great Bras D'Or lake, between the entrance to East bay and Barra straits which connects the Great with Little Bras D'Or lake.

The sum of $5,000 was voted in 1911-12, for the construction of a wharf and a road thereto, for which the materials were procured during 1910-11, and instructions were received to expend part of the amount by day labour.

The road was completed at a cost of $523.66, it is about 1,600 feet in length and 16 feet wide on top, and included two small bridges and 8 small culverts.

Owing to the lateness of the season, it was not deemed advisable to proceed with the construction of the breakwater.

The proposed wharf is to be 206 feet in length and 20 feet in width with an 'L' on the north-eastern side of the outer end 40 by 20 feet, and is to consist of blocks and spans, constructed of round timber, creosoted to high lake level, and the seaward faces are to be close-sheathed.

PLEASANT BAY.

Pleasant bay, Inverness county, is on the western coast of Cape Breton island, 24 miles north of Cheticamp and about midway between that place and Cape St. Lawrence.

The sum of $3,000 was voted in 1911-12, towards the construction of a concrete breakwater, estimated to cost $7,650, and part of the amount voted was authorized for expenditure by day labour.

Instructions to proceed with the work were received on August 7, when the whole staff were engaged in the preparation of plans and specifications for works to be let by contract, and it was found impossible to prepare plans for this work, consequently nothing has been done towards the expenditure of the amount authorized.

POINT ACONI.

Point Aconi, Cape Breton county, is the extreme north-eastern or Atlantic end of Boularderie island, and lies between the entrance to the Great and Little Bras D'Or channels.

The sum of $6,000 was voted in 1911-12 towards the construction of a breakwater. Plan and specification for the proposed work estimated to cost $13,000, were prepared and submitted on September 9, but tenders for its construction were not called

The proposed breakwater is to be 321 feet in length with an 'L' 164 feet in length, and 20 feet in width. It is to consist of round timber cribwork, creosoted to half tide, fully ballasted, and the seaward face is to be protected by close-sheathing and by a heavy quarried stone talus.

POINT EDWARD.

Point Edward, Cape Breton county, is a point of land separating the north-west from the south-west arm of the upper end of Sydney harbour; and Dixon's point is situated on the north-west arm, about 1½ miles west of Point Edward.

The sum of $2,000 was voted in 1911-12, towards the construction of a wharf at Dixon's point, estimated to cost $4,500, and part of the amount was authorized for expenditure by day labour.

The property, required for site and right of way for the wharf, has to be acquired before the work can be started, and as the owner of the property is captain of a vessel and not at home, nothing could be done in the matter.

POIRIERVILLE

Poirierville, Richmond county, commonly known as Lower D'Escousse, is a settlement on the north-eastern coast of Madame island, on the southern side of the eastern entrance of Lennox passage, a strait separating the island from Cape Breton island.

On September 19, 1906, a contract was entered into, in the sum of $7,575, for the construction of a public wharf but owing to delay in the delivery of the creosoted timber required, the work of construction was not commenced until September 24, and continued to November 30, 1907, when it was suspended for the season; on that date the blocks were all constructed up to the required height and fully ballasted and about one-half of the floor stringers were placed on the blocks and across the spans.

The work was again resumed on June 1, 1908, and was brought to completion on September 12.

The wharf extends to 10 feet at low water and is 340 feet long, 20 feet wide, with an 'L' on the southern side of the outer end, 20 by 20 feet, and consists of crib-work blocks and spans, the blocks being built of round timber with creosoted timber substructure; as a protection against ice, the faces of the outer block and the seaward faces and outer ends of the two blocks next to the end block, have been close-sheathed.

During the year 1911-12, the sum of $146.04 was expended in the construction of a freight-shed on the outer end of the wharf, 12 by 15 feet, with 7 feet posts, it is covered with cedar shingles, and outside walls are painted.

PORTERS LAKE.

Porters lake, Halifax county, is a long narrow strip of fresh water lying nearly north and south and situated about the middle of Halifax county or about 15 miles east of the provincial capital. It is about 18 miles in length, from a quarter to half a mile in width and the water being of good depth for almost its entire length, is navigable for vessels of 60 tons to its extreme head. The normal level of the lake is some 2 or 3 inches above H.W.O.S.T.

The works are fully described at page 60, part IV, of annual report for 1910-11.

During the fiscal year 1911-12, the sum of $8,431.72 was expended in widening and deepening the channel.

Work was begun April 5, 1911, and completed March 29, 1912.

PORT DUFFERIN.

Port Dufferin, Halifax county, formerly called Salmon river, is a thriving village of from 500 to 600 people, engaged in fishing, farming and gold mining. It is situated at the mouth of Salmon river which empties into an inlet known as Beaver harbour, about 84 miles east from Halifax by high road, and about half way between Halifax and the harbour of Canso.

In 1898-99, the sum of $1,646.69 was expended in constructing a public wharf. The completed wharf consists of an earth and stone embankment 116 feet long, 35 feet wide and a crib-work block 142 feet long and 28 feet wide, with an 'L' on the

outer end giving a face length of 56 feet. In 1904-5, the sum of $481.16 was expended in making repairs to the structure.

In the fiscal year 1910-11, the sum of $1,233.39 was expended in rebuilding the old crib-work wharf in pile and timber trestle. The completed work is 120 feet long, 35 feet wide with an 'L' 35 by 45 feet.

During the fiscal year 1911-12, the sum of $207.41 was expended in extending the earth and gravel approach.

The work was begun October 3 and completed October 20, 1911.

PORT FELIX.

Port Felix, Guysboro county, is a harbour and fishing station on the eastern extremity of Tor bay, on the Atlantic coast of Nova Scotia, 3½ miles to the westward of the entrance to White Haven.

A contract for the construction of a wharf was entered into on September 29, 1910, for $4,309.

The work, which is a block and span structure 225 feet in length and 20 feet in width, extending to 9½ feet at L.W.S., was commenced June 5 and completed July 4, 1911.

The expenditure for the fiscal year 1911-12, is $4,428.04.

PORT HOOD HABROUR.

The harbour of Port Hood, Inverness county, is on the east coast of Cape Breton island, about 20 miles to the northward of the northern entrance to the Strait of Canso.

The harbour was formerly a secure one; Smith island, which forms its west side, having been connected with the mainland by a beach of sand. In 1839, the sea made a break through the beach; the opening, at first narrow, was enlarged by the tidal current, with increasing rapidity, until it was entirely swept away. The harbour is now unsafe during northerly gales, except in a small cove on the east side of Smith island.

Works forming part of a proposed breakwater, of brush and stone, with stone covering and with a talus of stone on the seaward side to close the northern entrance, are: a work, undertaken in 1903-4 and continued every year up to 1908-9, extending from a point on the mainland 1,200 feet to the northward of the public wharf towards a point on the island to the northward of Smith cove, 1,600 feet to 19½ feet at extreme low water, also a work built during fiscal year 1909-10, extending from the island 633 feet to 21 feet at extreme low water, or to within 2,500 feet of the outer end of the work extending from the mainland. The work on the mainland side is 1 foot below extreme high water to a point 900 feet from the inner end, 3 feet below extreme high water from 900 to 1,400 feet from inner end and sloping from 3 feet below extreme high water to 19 feet 9 inches below low water at the outer end. The work, on the island side, slopes from about the level of high water at the inner end to 21 feet below low water at the outer end.

During the year 1910-11, the sum of $22,412.35 was expended in the construction and laying of a brush mattress, 44 feet wide and 4 feet high, extending for a distance of 1,580 lineal feet, from the outer end of the work on the island side towards the work on the mainland; and during 1911-12, the sum of $18,432.35 was expended in completing the laying of the brush mattress to the work on the mainland, a distance of 920 feet. This mattress is intended for a foundation for the proposed crib-work, which is to be built thereon.

Plan and specification for the crib-work, extension of the eastern or mainland approach were prepared, estimated to cost $150,000; tenders for its construction were called and received, but the work was not let.

Spring tides rise 4 feet.

Wharf.

This work is fully described at page 58, Part IV., of annual report for 1910-11.

During the year 1911-12, the sum of $1,357.86 was expended by day labour in cutting down to low water a section of the north-west corner of the wharf, 40 by 20 feet, and in reconstructing and ballasting it, and in close-piling its seaward face with native timber piling.

PORT LORNE.

Port Lorne, Annapolis county, formerly called Port Williams or Marshall's cove, is situated on the bay of Fundy, 32 miles north-east of Digby gut, and 6 miles north-east from Paradise station, on the Dominion Atlantic railway. The settlement comprises about 300 people, engaged in fishing and farming.

The breakwater was begun in 1835, at the joint expense of the inhabitants and the provincial government, the outlay on the work up to 1867 being $16,000. The first work done by the department was in 1873-4, when the breakwater was extended a length of 67 feet, at a cost of $3,500. In 1882-3-4, the work was further extended a length of 100 feet, width 36 feet and height 25 feet, at a cost of $5,402.69.

Between 1884 and 1907, numerous expenditures were made for repairs, renewals and extensions, fully described in the departmental report for the year 1906-7.

In 1908-9, the sum of $2,908.86 was expended in the construction of a new breakwater on the east side of the little harbour. The work is 140 feet long, 25 feet wide, and from 7 to 15 feet high.

Owing to the lateness of the season at which the work was begun (September 15, 1909), it was not quite completed at the end of the fiscal year.

In 1909-10, the sum of $600 was expended in continuing the work which again, owing chiefly to the lateness of the season, was not quite finished.

Spring tides rise about 32 feet.

In 1911-12, the sum of $225.96 was expended in the purchase of timber for the completion of the detached breakwater, built in 1909-10, and for the repair of the main breakwater.

PORT MALCOLM.

Port Malcolm, Richmond county, formerly known as Sea-Coal-Bay, is situated on the western side of the entrance to Inhabitant's bay and 1½ miles from the southern entrance to the Strait of Canso.

During the fiscal year 1910-11 an order in council was passed authorizing the purchase, for $2,100, of Mr. Edward Malcolm's wharf property, including a wharf extending 225 feet to 6½ feet at extreme low water, and two fish stores.

The sum of $4,900 was voted for expenditure during 1911-12, in repairing and extending the old wharf, and the amount was authorized for expenditure by day labour.

Instructions to proceed with the work were received on August 7, 1911, and as plan and specification for it had to be prepared, and these could not, at the time be attended to, owing to other more pressing work, nothing further was done in the matter, and no part of the amount voted for 1911-12 was expended.

PORT MOUTON.

Port Mouton is situated about 10 miles west of Liverpool. It is a fishing settlement of some eight or nine hundred people, and of considerable importance.

In the year 1900, the Public Works Department constructed a wharf which consists: of a stone bank approach, supplemented by four blocks of crib-work, each 28 feet long, which crib-work blocks are separated from each other by open spans 15 feet in the clear. It is 20 feet wide on top with the exception of the last 28 feet, which is 40 feet wide. It has at its face about 7 feet of water at L.W.O.S.T.

During the past fiscal year, the sum of $600 was appropriated for the purpose of replanking and recovering this wharf, the guard rails, floor stringers and plank all being in very bad condition. Of this amount, the sum of $248.18 was expended in effecting a portion of these repairs. The repairs were commenced on the 2nd day of October, and completed on the 9th.

Spring tides rise 7 feet, neap 4½ feet.

PORT RICHMOND.

Port Richmond, Richmond county, is at the head of Inhabitant's bay, on the northern side of the southern entrance to the Strait of Canso.

The sum of $10,000 was voted in 1911-12, towards the construction of a breakwater. Plan and specification for the proposed work, estimated to cost $22,000, were prepared and submitted and tenders for its construction were called and received, but the work was not let.

The proposed breakwater is to be 480 feet in length and 16 feet in width for a distance of 240 feet and 20 feet in width for the remaining distance, and consists of round timber crib-work structure, creosoted to half tide, fully ballasted, fendered and close-sheathed on the seaward face.

PORT WADE.

Port Wade, Annapolis county, in former departental reports called Victoria Beach, is situated on the north side of Annapolis Basin, 13 miles south-west from Granville Ferry, which is on the north side of the Annapolis river, directly opposite the town of Annapolis. It is 4 miles north-east from the town of Digby, and about 1 mile and a half to the north-east of the entrance of Digby gut. The whole distance from Granville ferry, 13 miles, and for a further 2 miles to Digby gut is a thrifty and well settled farming and fruit-growing district, with a considerable fishing industry in the lower 5 or 6 miles.

Port Wade is the southern terminus of the Middleton and Port Wade railway, built some four years ago, 51 miles long, now part of the Halifax and South-western railway system.

In 1904-5-6, a large pile-work pier was built by the department at a cost of about $95,000. The total length of the structure is 1,337 feet by a width of 50 feet and a height along the whole length of the 'L' of 57 feet. The 'L' is 456 feet long, and at L.W.O.S.T. carries a depth of 25 feet of water. Spring tides rise 27½ feet; neaps 23 feet. Out of the total number of bents, 153, the shoreward 40 are of native spruce piles, the remaining 113 being of creosoted Virginan pine; the caps, braces, stringers, walings and guards are all of Georgia pine and the flooring is of native spruce 6 inches thick.

In 1909-10, the sum of $200 was expended in screw-bolting some few of the stringers of the inclined slip, which had been slightly lifted by ice, and in placing 7 ladders at convenient places along the outer faces of the pier.

In 1911-12, the sum of $238.46 was expended in some further repairs and rebolting to the lower end of the inclined slip which had been damaged by ice. Work was begun on February 23 and suspended but not finished on March 16, 1912.

POULAMOND.

Poulamond, Richmond county, is a settlement on Isle Madame, on the southern side of Lennox passage, to the westward of the village of D'Escousse.

A wharf, undertaken in 1893-4, and completed the following year, consists of an approach 315 feet in length, a stone embankment 107 feet in length and a creosoted pile extension 120 feet in length. The depth at extreme low water, obtained by dredging in 1894-5, is 10 feet. Spring tides rise 6 feet; neaps 4 feet.

In 1895-6, the sum of $236.54 was expended in constructing a slip on the west side of the pile extension, and in widening the approach at its intersection with the highway and with the stone embankment.

In 1903-4, the sum of $334.97 was expended in renewing part of covering and cap-timbers, and 8 fender-piles of the extension, in raising, grading and draining the approach, and in the construction of a small warehouse.

The sum of $1,600 was voted for expenditure during 1911-12, on repairs and improvements to the wharf, and of the amount voted, the sum of $1,399.94 was expended by day labour in the renewal of pile-caps, floor-stringers, covering, cap-timbers and of several fenders; besides the whole work, which was too high, was lowered about 2 feet, and some of the piles in the approach, which had been lifted by the ice, were re-driven.

QUODDY ISLAND.

Quoddy island, Halifax county, is situated on the west side of Harrigan cove, about 100 miles east of Halifax, and 4 miles east of Port Dufferin. Within a radius of two miles, there is a population of about 100.

In order to provide a landing pier for the little steamer which plies between Halifax and eastern ports, the department in 1899 expended $823.25 in the partial construction of a public wharf.

In the fiscal year 1909-10, the sum of $999.83 was expended in completing the pier. The completed work consists of a stone and gravel approach 100 feet long, 20 feet wide and from 1 to 8 feet high and a block and span wharf 66 feet long and 20 feet wide, and an 'L' 32 by 20 feet at the outer end where at L.W.O.S.T. there is a depth of 12 feet of water.

During the fiscal year 1911-12, the sum of $200 was expended in constructing a small shed on the wharf.

Work was begun October 5, suspended October 18, 1911.

RIVER INHABITANT'S BASIN.

River Inhabitant's basin, Richmond county, is at the head of Inhabitant's bay, on the northern side of the eastern entrance to the Strait of Canso.

The sum of $3,000 was voted for expenditure during 1911-12, in the construction of a wharf, and instructions were received to expend the amount by day labour.

Two different sites were reported upon for a wharf in the basin, viz.: at Walkerville and at Whiteside, the estimated cost of each was $6,200, but as no decision was arrived at as to where it should be built, no part of the amount voted was expended.

ROSS FERRY.

Ross ferry, Victoria county, is on the northern sied of Boularderie island, and on the southern shore of the Great Bras d'Or channel, about 13 miles to the westward of its entrance into the Atlantic.

During 1895-96-97, a wharf was built by the department at a point about half a mile to the eastward of the ferry landing. It extends to 12 feet at low water; is 106 feet long and 20 feet wide, with an 'L' on the eastern side of its outer end, 30 by 22 feet, and consists of a shore abutment of stone, 23 feet long; a creosoted timber pile substructure, 50 feet long and 22 feet wide. During 1897-98, the wharf was connected with the public road by a road 320 feet in length, including a small bridge.

During 1909-10, the sum of $549.21 was expended in the renewal of floor-stringers, cap-timbers, covering, upper fenders, and in close-sheathing around the outer corners of the crib-work head.

During 1910-11, the sum of $218.57 was expended in the partial reconstruction of the crib-work abutments of the small bridge on the road connecting the wharf with the public road.

The sum of $150 was authorized for expenditure during 1911-12, in the construction of a freight-shed on the outer end of the wharf, by day labour, but as there is a freight-shed there already, which was bought by the department during 1910-11, from the Bras d'Or Steamship Company, and which is in a good state of repair, no part of the amount authorized was expended during the year.

ST. ANN'S HARBOUR.

St. Ann's harbour, Victoria county, is a fine basin at the head of St. Annn's bay, on the eastern coast of Cape Breton island. It is 7 miles in length and about 2 miles in width and carries a depth of about 50 feet. The entrance is very narrow, with a tide of 4 knots, and there is a dangerous bar outside on which a depth of 17 feet could be carried at low water.

Within the last few years, a considerable amount of traffic has been established at the head of the harbour by the construction of a pulp mill and the opening up of large and valuable deposits of gypsum, the produce of both establishments being shipped to the United States to be manufactured there.

Steamers carrying gypsum draw generally from 17 to 19 feet when loaded, and in order to permit them to cross the bar at the entrance at all times of tide, it was decided to dredge a channel across the bar 150 feet in width with a depth of 20 feet at low water.

The government dredge, *Cape Breton,* operated on the bar from June 8 to July 16, 1911, working 20 days and removing 18,178 cubic yards, scow measure, of sand and clay; and again from September 15 to November 30, 1911, working 23 days and removing 13,475 cubic yards of sand. The material was deposited about 1 mile distant from the work.

On completion of the work, there was a channel 150 feet in width, about 650 feet in length, and with nowhere less than 20 feet at low water springs. Spring tides rise 5 feet.

ST. JOSEPH.

St. Joseph, Inverness county, is a fishing and farming district on the western coast of Cape Breton island, about midway between the harbours of Margaree and Cheticamp, and about 1½ miles to the northwestward of the excellent boat harbour of Grand Etang.

During 1910-11, the sum of $600 was expended for the property required for a road to connect a proposed breakwater for the protection of the boat landing beach, with the public road, and the sum of $200.09 was expended in partially constructing the road.

The sum of $10,000 was voted in 1911-12, towards the construction of a breakwater. Plan and specification for the same were prepared and submitted; tenders were called, and the tender of Mr. D. W. B. Reid, of Halifax, N.S., for the sum of $10,275 was accepted.

The work under contract is 290 feet in length and 20 feet in width on top, with sides and outer end battering 1 in 12, and is to consist of round timber crib-work, laid open-faced, creosoted to half tide, fully ballasted and fendered, and protected on the seaward faces with close-sheathing.

The necessary materials were procured during the winter and the work of construction will be commenced as soon as the creosoted timber is delivered.

SAMBRO.

Sambro, Halifax county, situated on the Atlantic coast 16½ imles to the westward of Halifax harbour, 16½ miles from Halifax city, is an important fishing village with a population of 260.

During the fiscal year 1910-11, the sum of $2,216.51 was expended in the construction of a block and span wharf. The work, which was completed with the exception of an 'L' at the outer end, is 180 feet in total length, 20 feet in width and from 8 feet at the shore end to 22 feet in height at the outer end, where at L.W.O.S.T. there is a depth of 11 feet of water.

During the fiscal year 1911-12, the sum of $124.74 was expended in the purchase of timber for the completion of the 'L.'

SHAG HARBOUR.

Shag harbour is a scattered village of about 600 inhabitants situated about 6 miles north-west of Barrington, and about 45 miles south-east of Yarmouth.

During the fiscal year 1899-1900, the department constructed a pile trestle bent wharf at this place. During the fiscal year 1910-11, the department began the dredging of a channel from that wharf to the main channel. When this work was commenced, it was discovered that a portion of the channel was not navigable at L.W.O.S.T., owing to the existence of submarine rocks.

During the year, the sum of $465 was expended in removing the same.

During the present fiscal year, a further sum of $325 was expended in completing the work, which was begun on April 1, 1911, and completed on April 12.

The distance from the main channel to the wharf is 760 feet; the dredged channel is 80 feet wide with the exception of the last 160 feet, which is 160 feet wide, and the depth of water obtained is 10 feet at low water. The quantity of material removed during the past fiscal year is 12,590 cubic yards.

The total expenditure during the year is $3,740.49.

Tides rise spring 11 feet, neap 8 feet.

SHEET HARBOUR.

Sheet harbour (East river), Halifax county, is situated in the eastern part of the county, on the Atlantic coast. The village, which surrounds the harbour, contains a population of 500 and is a thrifty and prosperous community, engaged in farming and fishing. The harbour is one of the finest in Nova Scotia, being of considerable extent and having an abundant depth of water. It runs inland about six and a half-miles. Gerard's point, where it divides into two arms receiving, respectively, the waters of the East and West rivers. On June 9, 1889, a contract was entered into for the construction of a ballast wharf on the eastern side of East river, the completed work being 180 feet long, 20 feet wide with an 'L' 20 by 20 feet at the southern end.

In the year 1907-8, the sum of $1,199.88 was expended in building a commodious freight-shed 80 feet long and 30 feet wide, on the wharf, for the convenience of shippers.

During the fiscal year 1911-12, the sum of $227.93 was expended in making repairs to the wharf and in painting the shed.

Work was begun October 2 and suspended October 18, 1911.

SHEET HARBOUR PASSAGE.

Sheet Harbour passage, Halifax county, is the name of a small island between Sober island and the mainland at the north of Sheet harbour, 60 miles east of the city of Halifax. The mainland, adjoining the passage, has a population of about 150.

During the fiscal year 1911-12, the sum of $791.27 was expended in the construction of a block and span wharf 173 feet long and 20 feet wide, for the accommodation of fishermen and to serve as a landing pier for freight, &c.

Work was begun September 12, suspended October 18, 1911.

SHEFFIELD VAULT.

Sheffield vault, King's county, is on the south coast of the Bay of Fundy, about four miles east of Hall's harbour, and two miles west from Baxter's. There is a small saw-mill at the mouth of the brook and two or three families live within a mile of the place.

In 1911-12, the sum of $397.49 was expended in building a piece of crib-work, 150 feet long, 14 feet wide and from 3 to 8 feet high, along the side of the brook, near its mouth, for the purpose of forming a road to a breakwater to be built at some future time.

SHELBURNE.

The town of Shelburne is situated at the mouth of the Shelburne river, at the head of Shelburne harbour, which is so well known that a detailed description is unnecessary. In order to afford facilities for larger draught vessels to call, the department decided to construct a deep water wharf. The site chosen for this wharf is at the extreme end of Water street, at what is known as Battery point, to which a railway siding from the main line of the Halifax and South Western railway has already been graded and a track laid thereon. On October 12, 1910, a contract for a wharf to be constructed at this place, was executed with Messrs. F. A. Ronnan and Company and Daniel Stewart, all of Halifax, N.S., which contract is for the amount of $24,790. The work itself, however, was commenced by the contractors under special authority from Ottawa on September 26, 1910, and during the fiscal year 1910-11, was conducted with a fair measure of success. During that year, the rock bank was practically constructed. The net estimate, and therefore, I presume, the expenditure for this work during that year was $7,379.94.

During the past fiscal year, this work has been pursued, but not with the rate of progress which was desirable. The contractors have not shown the necessary diligence in procuring the materials, so that at different times, through lack of proper materials, the work has been delayed. At the close of the present fiscal year, there still remains from $500 to $750 worth of work to be done, so that it can be reported as being practically completed. It is 966 feet in length, consisting of three parts.

1st. The approach is in the usual rock bank form, 480 feet in length, 40 feet wide on top and about 9 or 10 feet high at its outside end, with both sides sloped to a batter of 1½ to 1.

2nd. The block and span work is 90 feet in length. It consists of three cribs, each 20 feet in length separated from each other by two spans each 15 feet in length. Three cribs are 40 feet wide, and are filled with ballast to the under side of the floor stringers.

3rd. Pile trestle bents which is 396 feet in length, the first 296 feet being 40 feet wide on top, the outside 100 feet being 70 feet wide, the 'L' on the outside end being 100 feet long by 30 feet, and placed on the eastern side of the wharf. Those pile bents are separated from each other longitudinally 9 feet measured from centre to centre, of piles. The height of the work at the outside end is 36 feet, which corresponds to a height of 4 feet above H.W.O.S.T.

Spring tides rise 6½ feet, neap 4 feet.

SKINNER'S COVE.

Skinner's cove, Pictou county, is on the western side of Notrthumberland strait, about 8 miles east of Cape John and about 20 miles north-west of Pictou harbour. A pond at the head of the cove is separated from the waters of the Strait by a sand beach, 250 feet in width.

The works for the protection of a channel through the beach, undertaken in 1905-6, and continued in 1906-7, 1908-9, include: A pier, on each side of a channel dredged to 2½ feet at extreme low water, of brush, stone and piles, 344 feet in length and 15 feet in width with a crib-work head, 40 feet in length by 20 feet in width, with creosoted substructure, and an extension inward, 156 feet in length on the west side and 68 feet in length on the east side of brush and stone 14 feet in width, on top, and 8 feet in height, founded in a trench excavated to 3 feet above the level of extreme low water.

During the fiscal year 1911-12, the sum of $331 was expended in deepening part of the channel by hand dredging.

Work was in progress August 21 to 31, and September 1 to 9.

SMILEY'S POINT.

Smiley's point (Port Dufferin), Halifax county, is a village of 500 or 600 people engaged in fishing, canning and gold mining, situated at the mouth of the Salmon river which empties into the inlet known as Beaver harbour, about 85 miles east of Halifax by high road and about half way between Halifax and Canso.

During the fiscal year 1908-9, the department expended the sum of $452.14 in the purchase of timber for the construction of a breakwater to be about half a mile below the public wharf, known as the Port Dufferin wharf.

In the fiscal year 1910-11, the sum of $2,551.24 was expended in the construction of a breakwater 170 feet long, the shoreward 120 feet in length being 15 feet wide and the outer 50 feet being 20 feet wide, the height of the work varying from 5 feet at the shore end to 19 feet at the outer end, where at L.W.O.S.T. there is a depth of 10 feet of water.

During the fiscal year 1911-12, the sum of $1,226.33 was expended in the purchase of timber in readiness for work under the 1912-13 appropriation.

SOBER ISLAND.

Sober island, Halifax county, situated at the mouth of Sheet harbour, 60 miles east of the city of Halifax, is a small island 3 miles in length and three-quarters of a mile in width, separated from the mainland by a narrow channel known as Sheet Harbour passage. The population consists of about 50 families engaged almost wholly in the fishing industry.

In 1902-3, the sum of $797.18 was expended in the construction of a small wharf.

In the fiscal year 1911-12, the sum of $71.20 was expended in the purchase of timber for the construction of an 'L' to the outer end of the wharf.

Work was begun September 13, completed September 21, 1911.

SOUTH COVE.

South cove, Victoria county, is a district on the southern shore of St. Patrick's channel, an arm of the Bras d'Or lakes, about 6 miles to the eastward of Little narrows.

During 1910-11, a plan and specification for the construction of a block and span wharf, to be built by day labour, were prepared, and the sum of $4,681.94 was expended in procuring nearly all the materials required in its construction.

The proposed wharf is to be 195 feet long and 20 feet wide, with an 'L' 20 by 20 feet on the eastern side of the outer end, and will extend to 11½ feet at low water. It will consist of blocks and spans; the blocks built of round timber with creosoted timber substructure, and the outer faces of the two outer blocks will be close-sheathed.

The sum of $3,000 was voted for expenditure during 1911-12, in the construction of the wharf for which the materials were obtained during the previous year, and of the amount voted, the sum of $1,791.97 was expended in completing the wharf, with the exception of some ballasting, the placing of about one-half of the covering, the placing of cap-timbers and a portion of the upper fenders.

SOUTH GUT.

South gut, Victoria county, is the local name of the southern arm of the head of St. Ann's harbour, at the head of St. Ann's bay, on the eastern coast of the island of Cape Breton.

A wharf was constructed by the department during 1890-91, on the southern side of South gut, 198 feet in length and 20 feet in width, extending to 6½ feet at low water, and consisting of a shore abutment, 48 feet long, and of four 20-foot blocks built with native round timber, with intervening spans 17½ feet in length. During 1902-3, an additional block 20 by 40 feet was placed 17 feet from the end of the wharf and connected therewith by a span, increasing the depth at the outer end to 8 feet at low water.

During 1903-4, the covering, the cap and the fenders on the original work were renewed, and the approach was graded and gravelled, and during 1910-11, a small freight-shed 10 by 16 feet was constructed on the outer end of the wharf.

The sum of $250 was authorized for expenditure during 1911-12, for the renewal of floor-stringers and a part of the plank covering on the original work, but of the amount authorized, the sum of $161.70 only was expended in the renewal of stringers, as the covering required could not be delivered before the close of navigation.

Dredging.

On July 16 and 17, 1911, the dredge *Cape Breton* removed 1,260 cubic yards of mud, improving the depth of water adjacent to the wharf.

SOUTH INGONISH.

Ingonish bay, Victoria county, is situated on the eastern coast of Cape Breton island, about midway between Sydney harbour and Cape North, and is divided into North and South bays, by Middle head, a narrow, rocky neck of land over 2 miles in length.

At the head of South bay, there is an extensive lake, separated from the sea by a beach, through which there formerly existed a shallow channel, which has since been widened and deepened by the department, so that vessels and steamers frequenting these waters can now enter at all times of tide.

During 1903, a wharf, 160 feet in length and extending to 16 feet at low water, was constructed near the ferry landing, on the southern side of the harbour, near its entrance. The wharf consists of a shore abutment and of four crib-work blocks with intervening spans. The abutment and the three inner blocks are 16 feet wide and the outer block, which forms the head, is 30 by 30 feet; all blocks are constructed of round timber laid open-faced, and the outer block has a creosoted timber substructure and is close-sheathed on all outer faces.

On January 21, 1911, a contract was entered into for the construction of an extension to the wharf, in the sum of $5,100. The work of construction was commenced on October 18, 1911, and was satisfactorily completed and accepted on December 20, following.

The extension consists of a span, 8 feet wide and 30 feet long, and of a crib-work block 24 feet in length on line of wharf, and 40 feet long on the channel face. The block consists of round timber crib-work, creosoted to half tide, fully ballasted and fendered, and protected by close-sheathing on all outer faces. The depth along the channel face at low water of the new block is 25 feet. Spring tides rise 4 feet.

The expenditure for the fiscal year 1911-12, is $5,528.29.

SOUTH LAKE, LAKEVALE.

South lake, Lakevale, Antigonish county, is situated on the western shore of St. George's Bay, about midway between the entrance to Antigonish Harbour and Cape George.

It is a large sheet of fresh water, separated from the bay by a beach of sand and gravel, about 900 feet in length, 300 feet in width and about 8 feet above the level of high water springs.

In 1907-8-9, a channel was cut through the beach, 40 feet wide at the bottom and 2 feet below high water, and a breakwater was built 300 feet long and 20 feet wide, consisting of ordinary crib-work, to protect the north side of its seaward entrance; during 1909-10, the channel was completed through the beach to a depth of 1½ feet below low water springs.

In 1910-11, a brush and stone dam was constructed 75 feet long and 12 feet wide on top, at the inner end of the breakwater, to close a breach made there, and in the removal of some 150 cubic yards of sand out of the channel.

During the fiscal year 1911-12, the sum of $1,707.88 was expended in procuring timber and ballast required for the construction of a proposed extension, 40 by 20 feet in line of work built of round timber crib-work with creosoted timber substructure, fully ballasted and sheathed on all faces with creosoted and hardwood sheathing.

Depth at outer end 12 feet. Spring tides rise 4½ feet.

Work was in progress December 11 to 30, January 4 to 31, February 6 to 9, and March 18 to 25.

SOUTH WEST COVE.

South West cove, Lunenburg county, is situated on the west side of St. Margaret's bay, about 6 miles from the village of Hubbards. It is a small cove formed by an island lying close to the mainland. The population of the district is about 100.

For the convenience of the fishermen of this district, as well as others passing to and from the fishing grounds, the department expended, in the year 1911-12, the sum of $250.73 in deepening the channel between the island and the mainland to allow the passage of boats at high water.

Work was begun May 29, completed June 17, 1911.

SPANISH SHIP BAY.

Spanish Ship bay, Guysboro county, is an arm of Liscomb harbour, the entrance to which is about eight miles east of the Halifax and Guysboro county line at Ecum Secum.

On August 8, 1908, the sum of $1,800 was authorized for expenditure by contract. March 1, 1909, a contract plan, specification and estimate of cost were for-

warded. August 10, 1910, an order in council was passed authorizing the purchase of wharf and property from Zebedee Hartling for the sum of $420; in 1910, the sum of $455.04 was expended during the months of October, November and December by day labour in raising, reballasting and building approach to wharf.

During the fiscal year 1911-12, the sum of $324.75 was expended in paying for and piling in a place of safety, about 1,000 feet of round logs, ordered 1910-11, delivered 1911-12, and in purchasing part of the materials required in the construction of a proposed extension. Depth at outer end 8 feet. Spring tides rise 6½ feet.

Work was in progress November 14 to 30, and December 1 to 30.

SPERRY'S COVE.

Sperry's cove, Lunenburg county, is situated at West Dublin, 2½ miles west of the mouth of Lahave river, and three miles west of Petite Rivière. It is a small boat harbour used by 20 to 25 fishermen intermittently through the fishing season, also by others as a landing for boats, &c. At L.W.O.S.T. the harbour is dry and cannot be entered by boats. In order to improve the harbour and enable boats to enter at low water, the department expended during the fiscal year 1911-12, the sum of $900 in dredging, by hand, a small channel 1,300 feet long, 15 feet wide and 4 feet deep. Work was begun the 2nd of October and completed the 30th November, 1911.

STONEY ISLAND.

Stoney island is one of the most important fishing stations on the south-western shore of Nova Scotia. It is situated on the eastern side of Cape Sable island, about 3½ miles south-east of North-east point, or 5 miles north-east of Clark's harbour.

In the year 1890-91, this department constructed a breakwater with a view of establishing secure anchorage for boats employed here. At present, these people have 16 boats from 10 to 12 tons capacity each, carrying crews of four men; four boats carrying from 2 to 3 men, and twenty-five smaller boats carrying one man each. In the village on the mainland opposite the island, where the people live, who do their fishing from this station, there are three stores, one church, one hall and a two-room schoolhouse. The population of this locality is in the vicinity of 500.

This breakwater did not fulfil the purposes of protection for which it was designed, as the undertow coming in through the gap, caused the boats to lie close to the western shore where they were exposed to the full force of the sea and wind, resulting in the destruction and damage of many of them. To construct a breakwater at a proper place would cost entirely too much to justify this expenditure, when the volume of business to be served is considered. The undertow coming over the gravel bar, would also detroy the efficiency of a breakwater even if it were constructed at a different location. It was, therefore, considered necessary to build upon the gravel bar a beach protection so as to shut out the undertow, and it was also recommended that the present breakwater be repaired, so that it could be utilized as a wharf. The proposed beach protection will be constructed of continuous rock-filled crib-work 831 feet in length, 6 feet wide on top and have an extreme height in the centre of about 13 feet, with a batter of one in four on the outside, the inside being plumb. The repairs required to the breakwater would be the practical rebuilding of the first 126 feet for a height of 4 feet from the top; the rebuilding of the outside 20 feet crib-work block for a height of 8 feet, and the recovering of the 34 feet of span. This work is also of crib-work, but of a heavier character than the proposed beach protection. During the past fiscal year, the sum of $4,073.23 was expended in the reconstruction of this work. All the material has been purchased. About 400 feet in length of the beach protection has been constructed and is fully ballasted.

Work was commenced on September 1, and completed on November 4, 1911.

Spring tides rise 8 feet, neap 5 feet.

SWAIN'S COVE.

Swain's cove is situated on the southern side of Cape Negro harbour, a distance of about 5 miles south of Port Clyde, at which latter place is the nearest wharf and port of call for steamers, as well as the nearest railway station. The inhabitants, who are practically all fishermen, number about 400, and at certain seasons of the year, when the fishing is good, this number is greatly increased. During the busy season, there are from 50 to 100 boats ranging in size from 3 to 50 tons each, fishing in the vicinity of this place. Besides the benefit to the fishing industry, which will be derived from this work, supplies at present which have to be carted from the railway station, a distance of 5 miles, or else boated from vessels lying in the harbour, will be landed at this wharf and thus save much inconvenience and extra cost to the fishermen as well as to the merchants. During the past fiscal year, the sum of $558.06 was expended in the purchase of material for this work, but no further work was performed.

This wharf, as proposed, will be 245 feet in length, consisting of a rock-bank approach 45 feet long and 20 feet wide; 3 cribs each 20 feet long, separated by two spans each 15 feet in length, and 110 feet in length of pile trestle bent, the bents being separated from each other 10 feet measured centre. The crib-work blocks, spans and the first 70 feet in length of the pile trestle work will be 16 feet wide on top and the remaining 40 feet in length of the pile trestle work will be 31 feet wide on top. Spring tides rise 8½ feet, neap 5½ feet.

SWIMS POINT.

Swims point, practically a continuation of Clark's harbour, is situated 1½ miles east of the village proper. In the year 1898-99, the department constructed a wharf consisting of a stone-bank approach 35 feet in length, 25 feet wide on top, with three 10-foot blocks of crib-work; three 18-foot blocks of crib-work; one 25-foot block of crib-work; three 13-foot spans, and three 10-foot spans. The width of the wood-work was 20 feet on top, except the last block which was made 40 feet wide, constructed in the shape of an 'L.' The height of the outer end was 25 feet. In the year 1903-4, an additional block of crib-work, 25 feet long and 40 feet wide with a height at the outer end of 29 feet, was constructed. This latter extension is likewise built of crib-work. During the past year, the sum of $553.74 was expended in the construction of a freight-shed on the head of this wharf. About three years ago, a small freight-shed 14 feet long and 12 feet wide, was constructed here, but owing to the growth in business, this shed was entirely too small. The steamers plying along the south shore between St. John and Halifax, had made this one of their calling points, and the amount of freight landed had increased far beyond expectations so that a larger building was necessary. The building thus constructed, is 32 feet long, 28 feet wide, with posts 14 feet high. It is located on the end of the wharf, 6 feet from the guard-timber and has double doors on each end, with a side door for loading purposes. Spring tides rise 10 feet, neap 7 feet.

This work was commenced on May 1, and completed on June 8, 1911.

SYDNEY HARBOUR (SOUTH BAR.)

The South bar is situated on the southern side of Sydney harbour, at the entrance to the southwestern arm of the harbour, about 5 miles from the city of Sydney.

This bar forms the principal protection to the southwestern arm of the harbour on which the city is situated, and as it has been wearing away and danger existed of a channel opening through it, the department decided to purchase it and to build protection works thereon.

The sum of $25,000 was voted in 1911-12, to buy the property, and for the construction of protection works.

A survey to ascertain the condition of the bar will be made in the spring, and the protection works will be completed during 1912-13.

On August 19, an order in council was passed to expropriate the necesasry land required.

SYDNEY MINES.

The town of Sydney Mines, Cape Breton county, is on the western side of the entrance to Sydney harbour, about 2½ miles to the northward of the town of North Sydney. It contains a population of about 7,000, and is the headquarters of the Nova Scotia Steel and Coal Co.'s operations.

On November 28, 1910, a contract was entered into for the construction of a public wharf at Barrington's cove, in the sum of $29,900.

The work under contract is 894 feet in length, extending to 12 feet at low water, with an 'L' on the western side of its outer end, 100 feet in length. It is to be 20 feet wide for a distance of 604 feet from its inner end, and 24 feet wide for the remaining distance and for the 'L.' The inner end for a distance of 60 feet shall consist of a road cutting; thence for a distance of 694 feet it shall be made up of blocks and spans, thence for a distance of 140 feet, or to its outer end, and including the 'L,' it shall consist of a continuous crib-work structure. The blocks and the continuous crib-work structure are to be constructed of round timber, creosoted to half tide, and the western end of the 'L,' the outer face and the eastern face, for a distance of 280 feet from the outer end, are to be close-sheathed.

The work of construction was commenced in the early part of June, 1911, and good progress was made up to September 30, when the work was visited by an exceptionally severe northeasterly gale. At the time, the creosoted timber substructures of all blocks were in place, built up to the required height and fully ballasted. During the progress of the gale, the sandy bottom, on which the blocks rested, was scoured from under them causing them to settle from 6 inches to 3 feet, and as an additional amount of creosoted timber will be required to raise them to the proper level and this could not be obtained at that season of the year, the work of construction was suspended during the month of October, to be resumed early in the spring.

The expenditure for the fiscal year 1911-12, is $18,578.82.

TANGIER.

Tangier, Halifax county, is a thriving settlement with a scattered population of 500 or 600. It is situated at the head of Tangier harbour, 50 miles east of Halifax. In the neighbourhood are extensive gold areas, famous for having produced the largest nugget (27 ounces) ever found in Nova Scotia. In the year 1907-8, the sum of $2,080.89 was expended in the construction of a block and span wharf. The following year, 1908-9, the sum of $628.89 was expended in the completion of a road approach. The work as completed, consists of a rock and earth approach 80 feet long and 25 feet wide; a block and spam wharf 120 feet long and 25 feet wide. During the fiscal year 1911-12, the sum of $410.97 was expended in the construction of a small freight-shed on the wharf.

Work was begun February 3 and completed March 16, 1912.

TENNYCAPE.

Tennycape, Hant's county, is a scattered farming district, situated about half way between Walton and Noel, or about six miles from each. The population of the

place within a radius of a couple of miles is about 200. A small lumbering industry ships about 300,000 feet of lumber annually. A small amount of fishing is also done. The nearest railway station is about thirteen miles and most of the local trade is carried by water. The nearest wharf is about six miles distant and, hitherto, vessels loading and discharging had to ground on the mud flats at the mouth of the river, where they were much exposed to seas from a northerly direction. On May 17, 1904, the department awarded a contract in the sum of $8,370 for the construction of a suitable breakwater and wharf to serve as a landing or shelter.

During the fiscal year 1911-12, the sum of $5,665.96 was expended in the construction of an addition to the breakwater. The addition consists of an 'L' 80 feet in length, 40 feet in width and 24 feet in height. The work was done by contract.

THREE FATHOM HARBOUR.

Three Fathom harbour, Halifax county, is an irregular shaped inlet of the sea about one mile in maximum length from north to south by a quarter to three-quarters of a mile wide, situated about fifteen miles to the east of Halifax harbour. The harbour is much frequented and used by fishermen from the contiguous settlements of Seaforth, East and West Chezzetcook, containing in the aggregate a population of some 500 to 600.

To prevent the sea from breaking through the narrow shingle beach which separarates the harbour from the Atlantic, the department, in 1878, constructed a crib-work beach protection along the crown of the beach. Its original length of 1,050 feet has been extended to 1,085 feet, its height is from 4 to 8 feet and its width 13 feet. Between the years 1901-10, several expenditures were made by the department in renewals and repairs.

During the fiscal year 1911-12, the department expended, by contract, the sum of $6,355.77 in the partial completion of an additional breakwater connecting the outermost portion of the beach with the small island on which the original breakwater ended. The work, when completed, will be 800 feet in length, 16 feet in width and 4 to 9 feet in height.

An expenditure of $1,252 was also made in repairs to the old portion of the work and in the purchase of timber for further repairs to be carried on during 1912-13.

Repairs were begun September 15 and suspended October 31, 1911.

TONEY RIVER.

Toney river, Pictou county, is a small stream emptying into the Northumberland strait, about midway between Pictou harbour and Amet sound.

During the years 1905-6, 1906-7, 1907-8 and 1908-9, the sum of $9,381.73 was expended in opening a new channel through a beach obstructing the entrance to the river and in constructing protection works. The protection works constructed on the east and west side were respectively 296 and 236 feet in length and 14 feet in width, except the outer 122 feet on each side which are 20 feet in width. The protection works are 36 feet apart and are each 10 feet in height, from 1½ feet below to 8½ feet above extreme low water.

In 1910-11, the sum of $1,943.85 was expended in the construction of a 50-foot extension outwards of the protection works on both sides.

During the fiscal year 1911-12, the sum of $594.58 was expended in procuring all the ballast poles and part of the ballast, round timber, &c., required in the construction of 80-foot extensions to both piers.

The depth at extreme low water in the channel between the piers, is about 1½ feet.

Spring tides rise 6 feet.

Work was in progress August 1 to 4 and September 26 to 30.

TROUT COVE.

Trout cove, Digby county, is a small indentation about 1,000 feet long and 600 feet deep, on the Bay of Fundy coast of Digby neck. It is about midway, and has the only breakwater affording shelter to fishing boats, between Digby gut and Petit passage, being 18 miles south-east from the former. The settlement at and near the cove, which is called Centreville, has a population of about 300 people engaged in fishing and farming. The fishing fleet comprises about fifty boats of 16 to 18 feet keel, and there are also owned here two schooners of about 30 tons each, which during the season run to and from St. John, Halifax, Yarmouth and Lunenburg, with produce, fish, lumber, flour, &c. There is a factory for the canning of finnan haddies and kippered herring, which is doing a large business. Within a short distance of the cove is an excellent fishing ground for cod, haddock, hake, lobsters, &c.

A breakwater was begun in 1856 by the inhabitants aided by the provincial government; the work as then built being 200 feet long, and 30 feet wide. In 1876 it was extended by the department a distance of 18 feet.

Since the latter date, the department has made numerous expenditures in repairs, renewals and extensions, aggregating about $20,000.

In 1910-11, the sum of $600.43 was expended in temporary and emergent repairs to the breakwater.

On January 6, 1912, a length of 175 feet of the middle or older portion of the breakwater was totally destroyed, leaving 110 feet in length of the outer end and 220 feet of the inner or shore end, both pieces being badly eaten by the limnoria, and otherwise in a bad condition.

In 1911-12, the sum of $108.83 was expended in removing a small quantity of ballast from alongside the remains of the shore end of the breakwater, and in placing a few fenders against its inner side, so that a little steamer could lie alongside.

Also the sum of $343.68 was expended in the purchase of a quantity of native timber for the construction of a proposed new breakwater.

TROY POND.

Troy pond, Inverness county, is on the eastern side of the northern entrance to the Gut of Canso, about 4 miles to the northward of Port Hastings.

The sum of $3,000 was voted in 1911-12, to cut a channel to a depth of 2 feet at low water across the beach, separating the pond from St. George's bay, and to protect its northern side with crib-work.

As plan and specification for this work had to be prepared, and when instructions were received to proceed with the work, other and more important works were in hand, and they could not be attended to at the time, and as since then it was deemed advisable to postpone this work; no part of the amount voted for 1911-12, was expended.

TUSKET WEDGE.

Tusket Wedge, Yarmouth county, is the name given to a peninsula about three miles long, north and south, by three-quarters of a mile wide, situated between Goose bay and the mouth of the Tusket river. The settlement on the isthmus and peninsula, 12 miles south-east from the town of Yarmouth, comprises a population of about 2,000 people, engaged in fishing and farming. It was incorporated in 1909, under the name of Wedgeport.

A public wharf was begun about the year 1879, by the provincial government, and finished by the Department of Public Works in 1884, at a cost of $850. It was a pile-work structure, 324 feet long, 30 feet wide and 13 feet high at the outer end. As spring tides rise 13 feet (neaps 10 feet), the mud flats are bare at low tide as far out as the

channel, or for about 340 feet beyond the end of the wharf, which, in consequence, was of very little use.

In 1910-11, the department expended the sum of $6,001.28 in rebuilding and extending it. Owing to the piles of the old structure being even more decayed than was anticipated, the appropriation did not suffice to complete the work.

In 1911-12, the sum of $1,246.03 was expended in continuing the work, but it was not completed. Work was begun on August 31, 1911, and suspended at the end of October.

Dredging.

In 1911-12, the departmental dredge *Canada* removed 10,930 cubic yards of mud in deepening and widening the channel approach to a private wharf on Chebeck creek. The dredged area is some four or five hundred feet long by about 100 feet wide. The dredging was carried to 10 feet below L.W.O.S.T.

Spring tides rise 12 feet. Work was begun on September 13 and finished on October 10, 1911.

UPPER PROSPECT.

Upper Prospect, Halifax county, is a fishing village of about 400 or 500 people, situated on the Atlantic coast, 20 miles west of the city of Halifax. The annual catch, according to the report of the Marine and Fisheries Department, was valued at $14,000, one hundred boats and a hundred and fifty men being engaged in this industry. The harbour is much exposed to the seas from the south and south-east.

In the fiscal year 1902-3, the department expended the sum of $767.26 in the construction of a small pile wharf. In 1903-4, the department expended the sum of $453.62 in completing the work. It consists of a pile wharf 61 feet long, 25 feet wide with an 'L' giving a face length of 55 feet at the outer end where there is a depth of about 10 feet of water at L.W.O.S.T.

During the fiscal year 1911-12, the sum of $504.58 was expended in the construction of a small freight-shed and in making the necessary repairs to planking, guard-timber and fender piles of the wharf.

Work was begun May 1, 1911, completed March 26, 1912.

UPPER WASHABUCK.

Washabuck, Victoria county, is a district on the southern side of the eastern end of St. Patrick's channel, an arm of the Bras d'Or lakes. It extends about 3½ miles along the shore and 3½ miles on the southern side of the Washabuck inlet, or Washabuck river, as it is called; the latter portion of the district is known as Upper Washabuck.

The sum of $1,800 was voted for expenditure during 1910-11, in the construction of a wharf at Upper Washabuck. The proposed work consists of a pile wharf, 50 feet in length along the channel face and 40 feet wide with an approach 70 feet long and 20 feet wide, made up of blocks and spans; and all bearing and mooring piles in the wharf to be of creosoted timber.

Plan and specification for the proposed work were prepared, all the materials required were delivered, and the approach was constructed. Out of the amount voted, the sum of $1,079.59 was expended on these items, up to March 31, 1910.

The sum of $800 was voted in 1911-12, to complete the wharf, commenced during 1911-12, and the sum of $806.65 was expended in finishing the work in accordance with plan and specification.

A further sum of $110 was authorized for expenditure during 1911-12, on the construction of a small freight-shed on the wharf, and this was accomplished at a cost of $108.05. The shed is 10 by 12 feet with 7 foot posts, shingled on roof and walls, and properly painted.

URQUHART'S LANDING.

Urquhart's landing at Black rock, Victoria county, is a small fishing station on that portion of the northeastern coast of Cape Breton island, locally known as 'the north shore' and is about midway between the harbours of St. Anne's and Ingonish.

During the year 1899-1900, the sum of $500 was expended in reconstructing and protecting a road, leading from the landing place on the beach to the top of the clay bank. The road was reconstructed for the convenience of the fishermen, whose fish-houses are on the top of the bank, and to give them a place on which to haul their boats during stormy weather.

The new road is 8 feet wide, benched in the face of the bank, and rises from 5 feet above high water, at the beach, to the top of the bank which is 75 feet above high water in a distance of about 300 feet. The lower end of the road was protected by a stone retaining wall for a distance of 25 feet.

During the heavy gales in the autumn of 1900, the stone retaining wall was broken up by the sea, and during 1901-2, the sum of $249.98 was expended in replacing the stone retaining wall at the lower end of the road by a low crib-work block, 40 by 15 feet, and in improving and repairing the road itself.

As it was found that the sea at the northern end of the crib-work wall was undermining the clay bank, during 1911-12, the sum of $299.82 was expended in extending the crib-work wall for a distance of 50 feet along the toe of the bank.

VICTORIA.

Victoria, King's county, is situated at the mouth of Church Vault brook, on the south shore of the Bay of Fundy, 52 miles northwest of Digby gut, and half way between Morden and Ogilvie's wharf, from each of which it is distant about 4 miles.

The breakwater, which also serves as a landing and loading pier, was begun in 1864, and finished in 1867, at the joint expense of the inhabitants and the provincial government. It is 243 feet long, 27½ feet wide at the outer end and 24 feet in height.

In 1878, the work was repaired and raised 4 feet.

Repairs were also made in 1891, 1893, 1900-1, 1902-3 and 1904-5.

In 1907-8, the sum of $189.50 was expended in filling with crib-work and ballast, a small breach, about 15 feet long, in the seaward face of the breakwater, and in the renewal of a small quantity of close-sheathing and floor planking.

In 1911-12, the sum of $1,264.23 was expended in rebuilding a portion of the middle length of the breakwater, which had been destroyed in the late fall of 1910. The new block is 32 feet long on the east side, 70 feet long on the west side, 25 feet wide and 11 feet high. The work, which was not quite completed at the close of the season, was begun on September 1, and closed on November 30, 1911.

WATT SETTLEMENT.

Watt Settlement, Halifax county, is situated on the east side of Sheet harbour, 3 miles below the village of Sheet Harbour. The population of the district is about twenty families. To accommodate the people of the district and to afford a landing place during the winter months when the upper portion of the harbour is frozen over, for the people of Sheet Harbour, a village of some 800 or 900 people, the department began the construction of a pile and timber wharf in 1911-12.

The amount of $2,203.03 was expended in the purchase of material ready for the construction of the wharf under 1912-13 appropriation.

WEST ADVOCATE.

West Advocate is situated about 2 miles west of Advocate harbour, near Cape Chignecto. For several years, the department has been considering the advisability of constructing a breakwater, where vessels might call and land passengers, freight, &c., particularly as no railway communiaction is, or probably will be, afforded this portion of Cumberland county. In case this breakwater were constructed, about 3,000 people would be served as it is within about six hours' sailing distance of St. John, N.B. During the early fall of 1911, this work was advertised and tenders called for the construction of the same, and the contract was let to Messrs. J. E. and H. Bigelow, of Canning, for the construction of this work. They propose beginning the same about May 10, 1912.

Spring tides rise here 40 feet, neap 30 feet.

WEST ARICHAT BREAKWATER.

West Arichat, Richmond county, is a small but safe harbour on the west coast of Isle Madame, sheltered from the south and west by Creighton island and by a breakwater between it and Isle Madame.

The breakwater is 1,211 feet in length and 24 feet in width and is constructed of round timber, laid open-faced and fully ballasted, and is about 11 feet in height, is covered with plank and the top is used as a roadwy between the two islands.

The sum of $3,000 was voted for 1911-12, to repair the top of the work and instructions were received to expend the amount by day labour.

Owing to the lateness of the season in which the instructions were received and the consequent late delivery of the materials required for the work, of the amount voted, the sum of $643.96 only could be expended during the fiscal year, and that was principally for materials delivered.

WEST BACCARO.

West Baccaro is about 3 miles west of the village of Port La Tour, and has a population of about 400, practically all of whom are dependent upon the fishing industry for their livelihood. It is one of the roughest spots on the coast, and in the year 1903-4, in order to convert a partial low-tide pond into a boat harbour, the Department constructed 1,055 feet in length of crib-work of the beach protection style along two sides of this pond, leaving a channel on the inner end of the pond as a means of entrance through, which channel was 225 feet in length, 25 feet in width and 3 feet deep. The crib-work thus constructed is 8 feet wide on top and from 4½ to 12 feet high. The work, which has been most satisfactory, has fully accomplished its purpose, so that the lobster fishing conducted from this pond, has largely increased in volume since this work was constructed. During the fiscal year 1910-11, about $2,000 was expended in extending the breakwater at its northern end, so that the extension formed a wharf at which the small steamers plying along this coast could call. This extension is 100 feet in length and 20 feet in width on top, constructed of solid crib-work of the usual style. By the time arrangements were completed, it was too late in the season and no expenditure was made thereon during the past fiscal year.

Tides rise: spring 8½, neap 5½ feet.

WEST BAY.

West Bay, Inverness county, is the western arm of the Great Bras d'Or lake, and West Bay port, is a harbour at the extreme western end of the bay.

On May 22, 1911, an order in council was passed authorizing the acceptance of the tender of the Atlantic Dredging Company, of Louisburg, at 28 cents per cubic yard, scow measure, for the dredging of about 118,720 cubic yards of material, scow measure.

The company's dredge, *Quincy,* commenced operations on June 10, 1911, and continued dredging until November, when she completed the work, removing 118,690 cubic yards of mud, and depositing the same at a distance of about 1½ miles from the mouth of harbour.

The work done consists in dredging a main channel into the harbour, 1,600 feet in length and 200 feet wide to 15 feet at low water, and of a smaller channel in extension, 625 feet in length and 175 feet wide to a depth of 12 feet at low water.

WEST CHEZZETCOOK.

West Chezzetcook, Halifax county, is situated on the western side of Chezzetcook inlet, which lies about 16 miles east of Halifax. The inlet is from half to three-quarters of a mile wide at its mouth and extends 5 miles inland and receives the waters of several small lakes at its head. The population of the village is about 700 to 1,000, located in a scattering manner along the western shores of the inlet.

The inlet itself, which has an average width of one mile, is shallow, with a bottom of sand and mud so that at low water there are extensive flats laid bare. There is however, a narrow tortuous channel running to the extreme head of the inlet with a depth of from 6 to 8 feet at L.W.O.S.T., which is used by numerous fishing schooners, coasting schooners and other small craft such as three and four-hand fishing boats and skiffs.

Owing to the gradual filling up of the entrance to the channel with accumulations of sand, a breakwater or mole was constructed by this department in 1892.

The breakwater has a total length of 1,100 feet of which 900 feet is at right angles to the channel and the remaining 200 feet or 'L' parallel to it. At the southern end of the 'L' is a square block 30 by 30 feet, which is close-sheathed with vertical sheathing 5 inches thick. The rest of the work was ordinary open cribwork, stone-filled, with sides battering one in five and a top width of 15 feet.

Between the years 1895-1910, numerous small expenditures were made in repairs.

In the year 1911-12, the department expended the sum of $835.15 in making repairs to the outer portion of the work. The sum of $981.09 was also expended in constructing an earth and stone approach to the public wharf on the mainland on the western side of the harbour and in the purchase of timber for the completion of the work during the year 1912-13. Work was begun September 16, and suspended October 14, 1911.

WESTPORT.

Westport, Digby county, is a thriving and prosperous village of about 700 people, chiefly engaged in fishing and to a small extent in farming. It is situated on the north-west end of Brier island, on the south-east side of Grand passage, 40 miles south-west of Digby gut. It has a hotel, telegraph and express office and several stores. The fishing fleet comprises some thirty schooners and fifty boats. The annual value of the catch is between $300,000 and $400,000. Westport is the port of call for a subsidized steamer plying between St. John, Yarmouth and other Bay of Fundy ports.

The need of a public wharf having been long felt, the department in 1911-12 expended the sum of $17,099.78 in building a wharf of pile work. It was begun on April 24, and completed on September 25, 1911. It is 396 feet long, with an 'L' on the outer end, giving a face length of 75 feet and a depth of water along the whole outer face of 12 feet at L.W.O.S.T. On the south side of the wharf is an incline

slip or ramp, 10 feet wide, with a slope of one in nine, terminating in a level platform 20 feet long, 5 feet above L.W.O.S.T. In the angle of the 'L' is a combined freight-shed and waiting room, 31 by 19 feet. In the shoreward 170 feet in length of the work the whole of the piles are of native timber untreated. In the outer 226 feet, the whole of the bearing piles are of Virginia pine, treated with 14 pounds of creosote to the cubic foot. The caps, braces, stringers and guard timbers are of Georgia pine and the decking of spruce. The shore end of the wharf is finished with an embankment of stone and gravel 40 feet long, and from 1 to 8 feet wide.

Spring tides rise 21 feet, neaps 17 feet.

WEST PUBNICO.

West Pubnico, Yarmouth county, is situated 30 miles south-west of Yarmouth. Pubnico harbour is about 8 miles long from mouth to head, lying due north and south, and from three-quarters to a mile and a half wide.

On the west side of the harbour, and about three miles above its mouth, a wharf was built by the department in 1885-6-7. The work consists of a stone and gravel causeway, 285 feet long, followed by a wharf 230 feet long, of pile bents. The bank is 25 feet wide, by an average height of 5 feet; the wharf is of the same width and from 10 to 14 feet high. At L.W.O.S.T., the mud flats are bare for over 1,000 feet beyond the end of the wharf.

From 1900 to 1906, the department made several expenditures in repairs and renewals, and in extending the pilework a further length of 167 feet.

Spring tides rise about 14 feet.

In 1907-8, the department expended the sum of $700 in digging by hand, at low water, a channel through the mud flats, from the end of the public wharf to the main channel, the dug channel being 780 feet long, 14 feet wide and from one foot to two feet in depth.

In 1910-11, the sum of $199.97 was expended in repairs to the upper part of the wharf, including new stringers, guard timber and plank, also the sum of $498.97 was expended in deepening and widening the boat channel. The excavated channel is 820 feet long, 12 feet wide and from 1 foot to 2 feet in depth.

In 1911-12, the sum of $963.68 was expended in deepening and widening, by hand digging, the boat channel through the mud flats, from the end of the public wharf to the schooner channel. The new digging, which was begun on July 1, and finished on December 27, 1911, was 1,125 feet long, 10 feet wide and from one to two feet deep.

WHITE POINT (SCOTCH COVE)

Scotch Cove (White Point), Victoria county, is an important fishing station in the southeastern part of Aspy bay, on the northeastern side of Cape Breton island, and is about three-quarters of a mile south from White point, on the southern side of the entrance to the bay.

During 1908-9, a breakwater, extending to 19 feet at low water, was constructed by the department for the protection of the anchorage and for a landing place for the steamer, which plys between the Sydneys and Cape North and calls at different points along the coast for and with passengers and freight.

The breakwater is 320 feet in length, and with the exception of the inner end, which is of stone, 16 feet wide, on top; it consists of crib-work with creosoted timber substructure, from 20 feet wide at the inner end to 30 feet wide at the outer end. The faces of the crib-work are constructed of squared timber, laid open-faced, and the seaward and outer end faces were close-sheathed; a brush mattress, loaded with stone, was placed along its seaward face for a distance of 200 feet from the outer end inwards to prevent scouring of the sandy bottom.

During 1910-11, the sum of $255.43 was expended in the construction of a warehouse 12 by 20 feet, on a separate crib-work foundation, at the inner end of the breakwater.

During 1911-12, the sum of $341.94 was expended in the construction of a road along the face of the bank, to connect the breakwater with the public road. The road is 370 feet in length and 13 feet in width on top and is cut into the clay bank, and the outer side is supported where necessary, by a stone retaining-wall, laid dry.

WHITE POINT.

White Point is a fishing settlement about 6 miles west of Liverpool, having a population of from three to four hundred people, most of whom are engaged in fishing. A breakwater was constructed by the department 25 or 30 years ago, but it is not high enough to protect the inside, which is used by the fishermen for a landing. Several times, this landing has become filled in from storms which moved several hundred tons of stone over the breakwater into the landing, and on each occasion this has had to be removed.

During the past year, the sum of $4,000 was granted for the purpose of constructing a stone breakwater, which would efficiently protect the landing. This breakwater was not commenced, but the sum of $55.50 was expended in again clearing out the landing. The work was commenced on April 10, 1911, and completed on the 13th.

Spring tides rise here 7 feet, neap 4½ feet.

WHITE'S COVE.

White's Cove, Digby county, is a settlement of about 100 people, engaged in fishing and farming, situated on the shore of St. Mary's bay, about 5 miles south of Weymouth.

In 1903-4, the department expended $1,804.63, in extending and repairing an ancient wharf of crib-work. The new block is 38 feet square and from 18 to 20 feet high, substantially built of round-log crib-work. The next 100 feet in length shoreward was also taken down and rebuilt and the whole wharf, 260 feet long, was levelled up with gravel.

In 1904-5, the sum of $1,004.01 was expended in extending the breakwater by a new block 30 feet long, 38 feet wide, from 19 to 21 feet high, substantially built of crib-work of the usual type.

In 1911-12, the sum of $6,409.60 was expended in building an extension, by contract, to the public breakwater-wharf. Work was begun on June 27, and finished on October 25, 1911.

WHITEWATER.

Whitewater, Kings county, is a small farming and lumbering settlement of about 200 people, situated on the west coast of Minas basin, about three-quarters of a mile south of Cape Blomidon, and 10 miles northeast of the village of Canning. In 1897-98, the department built a public wharf at a cost of $3,999.08, by day labour. It is 285 feet long, 20 feet wide, with an 'L' at the outer end 35 feet long, where at high water ordinary spring tides there is a depth of 17 feet of water. The wharf is constructed of block-and-span work, the blocks are solid crib-work, 19 feet long in the stem of the wharf, the spans being 14 feet in clear opening.

Between 1901 and 1905, three expenditures, aggregating $1,536.17, were made in repairs and renewals. Details in report for 1904-5.

In 1910-11, the sum of $993.15 was expended in partially renewing the floor and upper portion of the wharf.

Spring tides rise 40 feet, neaps 34 feet.

In 1911-12, the sum of $378.50 was expended in the purchase of timber to complete repairs and renewals.

WHYCOCOMAGH.

Whycocomagh, Inverness county, is a village on the north side of a bay of the same name at the head of St. Patrick's channel, an arm of the Bras D'Or lake.

A private wharf at this place was purchased with a warehouse and right of way to the public road, in 1897-8, and repaired and extended in 1898-9 and 1899-1900. The wharf was then 228 feet long, including 144 feet of stonework, 21 feet wide, and 84 feet of pilework, 25 feet wide over 59 feet of its length and 60 feet wide over the outer 24 feet, built over the remains of an old block and span structure.

During 1902-3-4-5, and 1907-8, expenditures were made in slight repairs to the wharf, warehouse and approach.

During the fiscal year 1910-11, the sum of $2,398.11 was expended in nearly completing a triangular pile-head, 78 feet long on channel face by 83 feet in line of work, to replace a pile-head which was in a dilapidated condition. Depth along channel face, 12½ feet at low lake level.

Out of the amount voted for 1911-12, viz.: $500, the sum of $494.31 was expended by day labour in completing the work in progress during the preceding year. The work done consists in the placing of about 2,000 feet B.M. of covering, 18 fender piles, 2 mooring piles and about 3,000 feet B.M. of chocks.

The expenditure for the fiscal year ended March 31, 1912, is $565.90.

WOLFVILLE.

Wolfville, King's county, is a town of about 2,000 inhabitants situated on the right bank and near the mouth of the Cornwallis river, which issues into the Basin of Minas at its south-west corner. It is an important station on the Dominion Atlantic railway, halfway between Annnapolis and Halifax, 66 miles from Annapolis and 7 miles east of Kentville, the county town of Kings.

In 1900-1, the department, at a cost of $6,360.50, built by contract, a public wharf on the right bank of the river near its mouth, at a distance of about half a mile from the town. The approach consists of earth-work, an embankment of 144 feet in length, 25 feet wide and of an average height of 5 feet. The wharf itself, which was substantially built of pile-work, was 152 feet long, 36 feet wide, including an inclined slip on the south side, 10 feet wide. It had an 'L' on the outer end, 82 feet long, giving a total face length on the river channel of 116 feet; the 'L' was 40 feet wide and from 48 to 49½ feet in height along the face, giving a depth of water, at H.W.O.S.T. of about 46 feet. At L.W.O.S.T. the river channel carries a depth of from 4 to 5 feet of mostly fresh water.

Spring tides rise 48 feet, neaps 40 feet.

Owing to erosion of the side of the channel and bank of the river, and to exceptionally heavy ice, the wharf was almost totally destroyed in the winter of 1903-4.

Between 1903-6, it was rebuilt in substantial crib-work. Full particulars will be found in the report for 1906-7.

In 1910-11, the sum of $217.12 was expended in repairing the steamer-bed in front of the wharf, which had been injured by a blow from a steamer making daily calls. The work done consists of driving, capping and bracing a bent of six piles, and filling the space underneath with stone and brush.

In 1911-12, the sum of $680.96 was expended in repairing the cribwork-bed for steamers in front of the wharf and in building a piece of crib-work on the west side, 50 feet long, 10 feet wide and from 6 to 16 feet high, for the purpose of preventing the ice and the tidal current from undermining the outer or north-west corner of the wharf and the steamer-bed in front of it.

Work was carried on for a few days at a time, from the middle of May to the end of November, 1911, and in the months of January and March, 1912.

WRECK COVE.

Wreck cove, Victoria county, is situated on that part of the north-eastern coast of the island of Cape Breton, known as 'the north shore' and lying between the harbours of St. Ann's and South Ingonish, and is about 8 miles distant from the latter.

The cove is only a slight depression in the coast line and is fully exposed to all winds from the north-east around to south-west. The shores consist mostly of high bluffs, from 20 to 50 feet above the sea level with the exception of a beach at Morrison's which is used as a landing place by the fishermen of the neighbourhood.

During 1908-9, the sum of $200 was expended in the removal of some large boulders off the beach, which rendered the hauling up and launching of fishing boats very inconvenient and often dangerous, and in the construction of a crib-work breastwork, 10 feet wide, about 6 feet high and 90 feet in length, in front of the fish-houses to protect them from the work of the sea.

The sum of $1,000 was authorized for expenditure during 1911-12, on an extension to the work constructed during 1908-9, by day labour, but as arrangements were completed too late in the season it was considered advisable not to proceed with the expenditure; no part of the amount granted was expended during the fiscal year.

YARMOUTH BAR.

Yarmouth harbour lies about N.N.E. and S.S.W. (true) and from the upper wharf to the mouth is nearly 4 miles long. At about the middle of its length, and for a distance of about three-quarters of a mile, it is protected from the main waters of the Bay of Fundy by a beach of gravel and shingle connecting Cape Fourchu, an island, or rather a peninsula, about a mile long, with Stoney point, the southern extremity of the mainland forming the western side of the harbour.

It was found, in 1867, that this piece of beach was wearing down under sea action, and that protection was necessary if the harbour was to be maintained. Accordingly in that year, the Government of Nova Scotia constructed 200 feet of crib-work at Stoney point. Between 1873 and 1875, the department built the remaining 1,000 feet to reach the north end of Cape Fourchu. Since 1875, the department has made frequent repairs and renewals, details of which will be found in the annual report of 1910-11.

In 1911-12, the sum of $815.89 was expended in repairs and renewals to the beach protection work, two pieces 30 and 50 feet long, respectively, were taken down and rebuilt for the full height and width of the work. The floor was repaired or renewed in several places.

Work was begun on September 25, and finished on October 20, 1911.

Dredging.

In 1911-12, the Dominion Dredging Company, under contract with the Department removed 205,380 cubic yards class 'C' and 57·6 cubic yards class 'A' in the upper part of the harbour. Work was begun on May 8, 1911, and ceased on October 13, 1911. Dredging was carried to 20 feet below L.W.O.S.T.

The total expenditure for the fiscal year, 1911-12, is $59,921.66.

PRINCE EDWARD ISLAND.

ALBERTON.

Alberton, Prince county, is situated about 55 miles west from Summerside. Alberton is a thriving village and important station on line of the Prince Edward Island railway and a port of considerable import and export by water; the place is the site of a railway wharf, the only one west of Summerside, but as the berth suit-

able for vessels of any draught was only at its outer end, the shipping facilities were both too limited and inconvenient; to obviate which, for vessels loading or discharging opposite the railway tracks, warehouse, &c., berths were formed during the past season on each side of its outer 175 feet of length; that on the western side being 40 feet wide and on the eastern side 60 feet wide, each of these carrying 12 feet at outer ends and 8 feet at inner ends of cuts at low water spring tides, that there rise 4 feet; the work was done by the dredge *Montague* that commenced work on June 12 and completed July 12, removing 6,500 cubic yards of material of hard and difficult nature, being partly shelly rock and hard sand; owing to low range of tides and that part of site being dry at low water, considerable of the material had to be overcast.

ASYLUM WHARF.

The 'Falconwood Asylum,' Queen's county, for the care of the insane, maintained by the Government of Prince Edward Island, is situated on the north bank of the East or Hillsborough river about 1½ miles east of Charlottetown. For convenience in carriage of coal, required for the institution, the local government in 1903 built a wharf extending to low water, and to which the department, in the same year, dredged a channel 50 feet wide carrying a depth of about 6 feet at low water or 15½ feet at high water spring tides that here rise 9½ feet.

During the past season, from June 16 to July 12, the dredge *Prince Edward* was employed in cleaning out the channel approach, about 750 feet long, and loading berths and basin at the end of the wharf; about 9,000 cubic yards of material, principally soft mud, being removed.

BAY FORTUNE.

Bay Fortune harbour, Kings county, is situated on the east coast of Prince Edward island, about 5 miles southwest of Souris, the eastern terminus of the Prince Edward Island railway, and about 15 miles north-east of entrance to Georgetown harbour, being at the mouth of the Fortune river about 2 miles below head of its navigation and from village of Fortune bridge. For improvement of the water at the entrance to the harbour, some of the residents of the district assisted by the provincial government thirty years or more ago commenced the construction of a breakwater extending 400 feet from the beach on the eastern side of the channel outwardly in a south-easterly direction, with the object of increasing the velocity of current at ebb tide, and, by scour, to deepen the channel. The work built, however, being much too short, proved ineffective, and having, as well, become much out of repair, this and its extension was effected by this department in 1892-93, making in all a work 850 feet long with width of from 12 to 20 feet. Considerable benefit being reported to have resulted from the extension, the depth of water being increased two feet, the works have since been maintained by small expenditures at different times; during last summer, it being found that the fender piling along the channel face of the outer 400 feet of the work had become unsafe and defective through age and action of the 'teredo' and running ice, these were renewed and ballasting of the work that had settled or been washed out was made up at an expenditure of $500.02. The work was commenced August 25 and completed September 30.

CAPE TRAVERSE WHARF.

Cape Traverse wharf, Prince county, is situated on the south side of Prince Edward island, about 15 miles east of entrance of Summerside harbour; its construction was first commenced by provincial government in 1869, who, by 1878, had built 1,470 feet with width of 24 feet.

In 1885, the control of the wharf was assumed by Department of Railways and Canals, as there had been constructed a branch line of railway to Cape Traverse, and an extension of 300 feet was added to the wharf. For the past 15 years, the Railway Department has practically abandoned the wharf and removed the freight sheds, tracks, &c., and entirely neglected repairs, so that those for whom it was first built were put to much inconvenience until repairs were effected by this department in 1907-8, when the inner portion was made available for use. During the past summer, further repair was effected at a cost of $290.14, the work done being the making up of filling in roadway where washout had occurred, repair and renewal of planking, &c., where required. The work was commenced August 9, and completed September 5.

CHARLOTTETOWN HARBOUR.

Charlottetown harbour, Queens county, is reached from the Northumberland straits through Hillsborough bay, its entrance from latter, between 'Block House' and 'Sea Trout' points, being about three-quarters of a mile wide, which width continues for about a mile, to Canseau and Battery points, immediately within which, at the confluence of the Hillsborough, West and North rivers, it widens and expands into one of the finest natural harbours in America, being accessible for vessels of the largest class, and affording perfect safety for any number or description.

Work was done by the dredge *Montague,* which wintered at the wharf, commencing the dredging on May 1 and continued up to May 27, completing the clearing out of the dock, removing during that time 12,990 cubic yards of clay, mud and sand. About the same time, May 4 to 23, the dredge *Prince Edward* was engaged in deepening. for Messrs Buntain & Bell, the shipping berths on the east side of what is known as the 'Connolly wharf,' removing 6,525 cubic yards of hard sand and mud. May 25 to June 10, the *Prince Edward* was engaged in deepening for Messrs. A. Pickard & Co., the loading berth on west side Peake's wharf, removing 4,340 cubic yards clay, sand and mud.

CHINA POINT PIER.

China Point pier, Queens county, is situated on the west side of the Orwell river near its entrance into Orwell bay. Originally built by the local government its control was assumed by that of the Dominion, in 1884. It has in all a length of 426 feet, the pier-head being 72 feet by 37 feet and fronting on channel where a depth of 15 feet at low water, or of 23 feet at high water spring tides, that here rise 8 feet, is carried. Being an old structure when assumed by the Dominion Government, it has since required much repair to keep it in passable condition. During the past summer, an expenditure of $50.05 was required for making up washout and settlement in a portion of the roadway approach, and replanking a 70-feet length adjoining the pier head. The work, which was commenced September 12, was completed September 16.

COVE HEAD HARBOUR.

Cove Head harbour, Queens county, is on the north side of the island, about midway between Tracadie and Rustico harbours and distant by road about 14 miles directly north from the city of Charlottetown.

Repairs have at different times been required, and such had been intended during past season but not considered advisable, when only having five-twelfths of amount of appropriation available, doing further than procuring of some required materials, the cost of which with construction of a 370 feet length of beach protection work on west side was $370.80.

FRENCH RIVER.

French river, Queen's county, is a small tidal inlet about 1½ miles long situated on the western side of New London bay near its entrance into the Gulf of St. Lawrence, and where, during 1901-2, the widening and deepening of its channel, so as to carry 10 feet at low water spring tides or 14 feet at high water spring tides, that here rise 4 feet, was effected by the dredge *Prince Edward* so as to form better approach to the wharf at its head and where the village of about 150 inhabitants is situated. Portions of the channel latterly, being found to have become somewhat silted up and its navigation difficult, improvement of this was effected during the past season by the dredge *Montague* that worked at the place October 6 to October 13, removing during the time 3,420 cubic yards of material composed of sand, mud and silt.

GORDON'S POINT.

Gordon's Point wharf, Prince county, is situated on the west side of the Foxley river near its entrance into Cascumpec bay, and by road distant about 5 miles from Alberton, or by water across the bay about 3 miles from the Prince Edward Island Railway wharf of that place. The wharf was built in 1893 by provincial government to provide shipping facilities for the district and consisted of a shore abutment or approach 275 feet long by 20 feet wide, a 'span' of 18 feet long and outer block or pier-head of 30 by 30 feet, the latter extending out to a depth of 8 feet at low water or of 12 feet at high water spring tides that here rise 4 feet; the pier-head, however, was carried away, down to low water mark, by the storms of the fall of 1909, and the remainder of the work so badly damaged as to have been quite unserviceable, this causing much inconvenience to the persons formerly having its benefit; at their request, and with the understanding that the provincial government would transfer to the Dominion government all right and title to the existing work, the latter has assumed its control as well as undertaken its repair, a contract for which was entered into December 20, 1911, with Messrs. Rankin & Gordon, for the sum of $2,400, the materials for which are being delivered with the intention of commencing construction as early, in the coming spring, as weather conditions will permit.

GRAND RIVER (NORTH).

Grand river (north) pier, Prince county, is situated on the north side of the Ellis or Grand river near its mouth where entering Richmond bay and about 7 miles northeast, by road, from Wellington station on line of the Prince Edward Island railway, and was constructed by the provincial government in 1880-81-82, but by 1902-3, having, by settlement and storms, become unserviceable, and the local government unwilling to effect repair, then transferred to the Dominion Government by which it was, so far as the wharf was concerned, put in good and useful condition; the wharf, however, only extended out to a depth of about 4 feet at low water spring tides, and as this, with the extreme rise of 4 feet of high water spring tides, did not provide required depth for the class of vessels that were dsired to call at th place with or for cargoes, and such represented to the department, the dredge *Montague* was sent there during the past summer and employed July 19 to 31 in deepening to 10 feet at low water springs up to the end and, with width of 45 feet, along the sides of the wharf inwardly 150 feet, removing 8,700 cubic yards of material composed of mud and clay.

While the dredging was in progress, it being found that the fender piling on outer part of the wharf or pier-head was completely destroyed, below line of low water, by action of 'teredo,' and being advisable, owing to the dredging, having the

piling removed, this was done; work was commenced on September 23 and completed on October 28; besides fender piling of the pier-head, some repair was also made to the roadway approach where wash-out and settlement had occurred, the expenditure in all being $408.19 and $10,907.43 for dredging.

GRAND RIVER (SOUTH).

Grand River (south) wharf, Prince county, is situated on the south side of the Grand river, near its entrance into Richmond bay, and about 9 miles distant north from Summerside, the shire-town of the county, and was built by the Provincial government about 17 years ago with intention of providing shipping facilities for the district; it then having a length in all of 950 feet, 20 feet wide excepting its outer 40 feet that had a width of 40 feet. Being of poor and very indifferent construction it, very shortly after completion, became so injured as never to have been of use for purposes of shipping, but has proved of much benefit as a shelter, and for ferry service.

Contract was entered into with Mr. Roderick McNeil for $6,499 for its repair, reconstruction, strengthening, &c., December 20, 1911; procuring and delivering of materials have since been in progress, but it is not likely that a commencement will be made before departure of the ice about April 15 to May 1, next.

HAGGARTY'S.

Haggarty's wharf, Queen's county, is situated on the southern side of the Hillsborough river, about 12 miles east of Charlottetown, and is one of the Prince Edward Island piers, control of which was assumed by the Dominion government, which, being an old structure and of very poor construction, has required, as described in departmental report 1907-8, some expenditure almost annually to keep it in passable condition for traffic, and as in the spring of 1910 its entire top was found to be quite unsafe owing to decay in face-timbers, floor-stringers, covering, &c., reconstruction of all this portion was made in the summer of that year, the pier head being also raised and enlarged by an addition of 40 by 20 feet to its western side, by which, with the warehouse and waiting room erected by the department in 1909, making the pier one of the best and most convenient in the river, were it not that the berths for vessels were only at its outer face, but improvement as to this was as well effected during the past season by the dredge *Prince Edward* that worked August 11 to 30 deepening the water at the sides of the outer 100 feet of its length so as to carry 8 feet at low water spring tides, where formerly dry at this stage, or 18 feet at high water spring tides, that here rise 10 feet, removing 7,400 cubic yards of material composed of soft clay and mud.

HIGGIN'S SHORE.

Higgin's Shore pier, Prince county, is situated on Egmont bay, about 10 miles north of Cape Egmont and 6 miles west from Richmond station, on line of the Prince Edward Island railway, being one of the Prince Edward Island piers, originally constructed by the provincial government, control of which was assumed by the Dominion in 1884; it was then 450 feet long, 20 feet wide, extending out to a depth of about 2 feet at low water or of 6½ feet at high water spring tides that rise about 4½ feet. Since its control has been assumed by the Dominion government, it has at different times received repair and extension, &c., as fully described in departmental reports 1908-09-10, having now a length of 570 feet which extended out to a depth of 3½ feet at low water; such, however, not being sufficient and the place being the shipping point most convenient for a large district containing about 1,000 inhabitants, the dredge *Pownal* was employed from July 17 to end of November, 1911, at forming a channel that would carry depth of 7 feet at low water up to the pier head; during the time, making a cut about 1,500 feet long and about 40 feet wide, removing 8,960 cubic yards of material composed of sand and hard clay.

KIER'S SHORE.

Kier's Shore pier, Prince county, is situated on the east side of Richmond bay, about 7 miles north from Kensington, a village and station on line of the Prince Edward Island railway. It was originally constructed by the Government of Prince Edward island, many years before confederation, and one of the Prince Edward island piers, control of which was assumed by the Federal Government in 1883-4, since when it has, besides being kept in good repair, been much improved, enlarged, &c., by the different expenditures made on it, as described in departmental reports, of 1899-1900 and 1906-7.

During the past season, August 2 to September 16, the dredge *Montague* was employed in clearing out, widening and extending the channel approach from the outer deeper water up to the pier, forming basin for turning of vessels at its end and shipping berths at its sides, all of which to carry 11 feet at low water spring tides or 15 feet at high water spring tides that here rise 4 feet, removing in all 19,600 cubic yards of material composed of sand, mud and clay.

LENNOX ISLAND.

Lennox island, Prince county, which is an Indian reserve, is situated in the northwestern end of Richmond bay and on the north side of Prince Edward island. It contains about 1,300 acres and has a population, at present, of about 230 persons, all Indians.

No landing place existing on the island for small vessels or boats, at the request of the Department of Indian Affairs, examination was made, site selected, plan and specification prepared and contract entered into July 30, 1910, with Messrs. Ramsay & McNeill for the construction of a wharf 275 feet long, for the bulk sum of $1,950; delivery of the materials was made during the winter and work commenced latter part of March, 1911, and carried on from time to time up to July 30, when satisfactorily finished.

MIMINIGASH.

Mimimigash harbour, Prince county, is situated on the northwest coast of the island, about 15 miles south of North cape and 18 miles north of West point. Works for formation of a boat harbour at the place were commenced by the Dominion Government in 1878 and since been continued from time to time until now consisting of piers or breakwaters on either side of the entrance and making the position permanent as also confining its width to about 60 feet; the pier on the north side is 550 feet long and that on the south side 400 feet, inward of each of which protection works were also built to guard against new channels forming through the beaches, which originally were little above high water spring tides.

For further improvement as also for protection and strengthening of outer end of north breakwater that had become weakened by action of the teredo, running ice and storms, a contract for the sum of $3,337 was entered into September 29, 1910, with Mr. Innis Trail Reid, for an extension of 40 feet to the north breakwater, some materials for which having been got out during the fall and early winter, commencement of construction was made February 27, 1911, and continued up to May 3 when suspended until June 8, after which carried on up to October 28, when satisfactorily completed. The total cost of the work, including inspection, was $2,805.25.

MOUNT STEWART.

Mount Stewart village, Queen's county, is situated at the head of navigation of the Hillsborough river, 18 miles east of Charlottetown and is the junction of the Souris and Georgetown branches of the Prince Edward Island railway; it has a

population of about 400, while the immediate surrounding districts, all thickly settled, have fully 1,500 additional residents, all interested in having improved facilities for freighting by water to and from the place, which is carried on by schooners usually of from 50 to 100 tons, general farm produce being exported, while coal, lumber and general merchandise is imported.

For this traffic while, as described in departmental reports of 1908-9-10, suitable wharfage accommodation has been provided, improvement of channel is much desired, and towards this the dredge *Prince Edward* was employed last season from September 1 up to November 17 deepening the water at end and sides of the government wharfs, forming basin in front of them to 7 feet at low water spring tides, so as to admit of the turning of vessels, and deepening a portion of the channel for a width of 50 feet to same depth, or what will give 17 feet at high water spring tides, that rise 10 feet; in all 13,200 cubic yards of material composed of mud and clay being removed.

NAUFRAGE POND.

Naufrage pond, King's county, is situated on the north coast of the island about 20 miles west of East point, and about 15 miles east of entrance to St. Peters bay, while by road it is about 13 miles distant directly north of Souris, the eastern terminus of the Souris branch of the Prince Edward Island railway. Description of the pond and as to what has been done for formation of a small boat harbour is given in departmental report of 1909-10.

With the view of improving approach and shelter for boats, tenders were called for during the past summer for extension of the works, the contract for which, viz., addition of 150 feet to the northern pier; of 50 feet to the southern one, and deepening of entrance two feet, has been awarded to Mr. W. H. Townshend for bulk sum of $6,789, who, during the winter, has been getting out and delivering materials, but will not be able to make commencement of construction before, probably, latter part of May or early in June.

NORTH CARDIGAN.

North Cardigan pier, Kings county, is situated on the north side of the Cardigan river, about five miles below Cardigan bridge, the head of navigation on that river, and is one of the Prince Edward Island piers originally built by the provincial government, the control of which was assumed, in 1884, by the Dominion, since when, as described in departmental report of 1904-5, it has been about rebuilt by the different repairs, &c., made to it from time to time, and has been, as well, somewhat enlarged.

During the past season, the sum of $246.10 was expended in the reconstruction of a length of 75 feet of its top, where floor-stringers, covering, &c., had become, through age, defective; the new roadway being formed of broken stone and gravel by which the former spans in the work were entirely filled in, and it is hoped will prove of a more permanent character; the strengthening of this portion of the work was also effected by the fender piling of its sides at 5 feet centres.

PORT HILL.

Port Hill, Prince county, is a small settlement near the northwestern end of Richmond bay, and where, at the north end of what is known as the 'Cooper's road,' a site was selected for the construction of a small landing pier for use in connection with a similar one built at Lennox island, as a landing place for the Indians of the reserve on Lennox island. The contract for the work was entered into August 3, 1910, by Messrs. Ramsay & McNeill, for a bulk sum of $4,554 and com-

mencement made September 15, but suspended October 29, owing to weather conditions and awaiting delivery of materials; the work then constructed consisting of the inner 200 feet length or shore abutment. Work was resumed August 1, 1911, and continued in progress up to the 24th November of that year, when satisfactorily completed.

It is in all 575 feet long and having a width of 20 feet, excepting that of outer block or pier head, 30 feet long, that also has a width of 30 feet; this extends out to a depth of about 4 feet at low water or of 7½ feet at high water spring tides that here rise 3½ feet.

RED POINT.

Red Point pier, Queen's county, is situated on the south-eastern side of the Hillsborough river, about six miles east of Charlottetown, and is one of the Prince Edward Island piers, control of which was assumed by the Dominion Government in 1897-98, since when different small expenditures have been required to keep it in passable condition; it is in all 650 feet long and averaging 21 feet wide, and, while originally extending only out to about low water, has now at its end and along its sides for a length of 100 feet and for a width of about 50 feet, a depth of 10 feet at low water spring tides or of 19½ feet at high water spring tides, that here rise 9½ feet.

Dredging was performed by the dredge *Prince Edward,* July 15 to August 6 last, during which time 11,100 cubic yards of material was removed, consisting of clay and mud.

It had been intended, with the appropriation made at the last session of parliament, to enlarge pier head, which is found much too narrow for turning teams, but found not advisable making commencement of this with five-twelfths only of appropriation available, and nothing was done further than having creosoted bearing piles, to be used, moved to the site from where stored at Georgetown; some repairs, however, were found necessary to the face of the work where a portion of the wall fell out through its decay and rendered the passage over the roadway unsafe; this was put in order, and some 460 lineal feet 8 by 8-inch guard timber and 21 piles, each 25 feet long and 9 inches diameter at small ends, were also delivered during the winter, the expenditure for which, and that of the repairs effected, amounted to $139.80 and $3,288.88 for dredging.

ROBINSON'S ISLAND.

Robinson's Island breakwater, Queen's county, is situated on the western end of Robinson's island, and on the eastern side of the entrance to Rustico harbour, being built in 1905-06-07 for the purpose, in conjunction with the similar work on its western side, of narrowing the channel and thus, by increased current so caused at ebb tides, to scour and improve the depth of water carried on the sand-bar obstructing the entrance. The work has in all a length of 750 feet, the construction, &c., being as described in departmental report 1908-09.

During the past season, the sum of $232.80 was expended in making up with brush and stone, some washout and settlement that had occurred in the filling of its inner portion.

ROCKY POINT.

Rocky Point, Queens county, is situated within the entrance of Charlottetown harbour, on the south side and near the mouth of the West or Elliott river, being the site of a ferry wharf, which, in conjunction with the one at Charlottetown, used by the ferry steamer conveying foot passengers, teams, &c, from portions of lots 65, 30 and other portions of the south-west part of Queen's county, between their homes and Charlottetown, is also largely used by residents of latter place particularly during summer

months. The dredged channel, formed to the wharf many years ago, having latterly filled in very much, no dredging having been done at it for the last 20 years, the approach at low tide being now made only with difficulty; for improvement on it, work was commenced by the dredge *Prince Edward* 23rd and so continued up to November 30, when suspended owing to breaking of drum of swinging engine; while working, 1,100 cubic yards of soft mud and clay were removed.

RUSTICO.

Rustico harbour, Queens county, is on the north side of the island about midway between East point and North cape, and is one of its most important fishing stations. For improvement of its approach, which is obstructed by a shifting sand bar, the department, during 1881-82-83-84, constructed works on either of the entrance for the purpose of confining the current at ebb tide and so, by scour, deepen the water and which, to some extent, was said to have been obtained.

Owing to storms, action of ice, &c., but more particularly from age and the ravages of the 'teredo,' the northern work having become defective, so much so that in some parts it was impossible to repair, a contract was entered into August 30, 1910, with Mr. Andrew Martin, for the sum of $6,775 for its re-construction, as also general repair of that of the adjoining beach protection; work on which latter was commenced September 1, 1910, and carried on up to September 15 of that year when suspended, after which nothing was done, excepting procuring of materials, until May 1 last, when construction of the outer portion was commenced and continued in progress until completion on October 27 last..

The total expenditure for the fiscal year 1911-12, was $6,987.50.

SOURIS.

Souris harbour, Kings county, is situated on the southern coast of the island, about 16 miles south from East point, and most important as a harbour of refuge and place of shipment, for both of which it has been rendered available by the breakwater built and maintained by the Dominion government, as described in departmental reports of 1899-1900 and 1908-9-10. The town of Souris, a place of about 1,200 inhabitants, is the eastern terminus of the Prince Edward Island railway, which has here a deep water wharf which is the point of call for several lines of vessels plying between Souris, other Canadian ports, Newfoundland, &c.

To provide better accommodation for the vessels engaged in this traffic, considerable dredging is required, and has been done at different times, within the harbour, and in this connection the dredge *Montague* was employed November 2 to December 14, 1911, removing 6,289 cubic yards of material composed of hard sand and clay, being difficult digging owing to stormy weather and the working of dredge and plant being much inconvenienced by movement of vessels arriving for shelter, &c.

SOUTHPORT.

Southport wharf, Queens county, is situated on the south side of the Hillsborough river, immediately opposite the city of Charlottetown, being among the first structures built by the Government of Prince Edward island, its use being more particularly for ferry purposes, and for which used up to the spring of 1906, when, after opening of the Hillsborough river bridge for traffic, it was abandoned, and, as for some years previous, in anticipation of having the bridge available, only sufficient repairs were put on it to keep it for the time passable, it very shortly became unserviceable and finally a complete wreck and of no use whatever for shipping purposes, as it had sometimes been employed.

To obviate which, at the request of residents of the district, and meet the wishes of the provincial government, the sum of $8,000 was appropriated at last session of

parliament for its repair and reconstruction, and under authority received August 30 last, after first procuring some of the materials required, work was commenced on it by day labour September 11, and continued up to December 13, when suspended for season. The work done was the reconstruction of the outer 215 feet of the pier head, driving creosoted bearing piles for a farther 87 feet on east side of same, repair of walls, &c., of the roadway approach, putting it in passable condition until work can be resumed in spring when it is intended raising it about two feet. For this work, and timber and piling delivered during the winter, the expenditure has been $3,495.47.

SUMMERSIDE.

Summerside harbour, Prince county, is on the southern side of the island and is its second place in importance for shipping, &c.; the town of Summerside, as well, with a population of about 3,500 inhabitants, is also next to Charlottetown in importance as a business centre and is one of the principal stations of the Prince Edward Island railway. During season of navigation it has daily communication with the mainland at Pointe du Chêne, N.B., by the steamers of the Charlottetown Steam Navigation Company connecting with the Intercolonial railway, and so with all parts of Canada and the United States, &c. For improvement of the channel, both as to direction and depth, dredging at different times has been done by the department, while, for protection of the harbour from southwest winds, a breakwater 3,200 feet long, extending northerly from its southern side has been constructed by the Dominion government, as described in departmental reports of 1908-9-10-11.

To further improve direction of channel, a contract was entered into September 11, 1911, with the Dominion Dredging Company, for the removal of what is known as the 'north shoal,' and by which, when completed, a direct channel carrying 20 feet at low water springs, into the harbour will be provided. Owing to the contractors being delayed in getting their dredge and other plant to the place, work was not commenced until November 11, and having to be closed down, owing to stormy weather, on November 27, little progress was made; the work done consisting of one direct cut through the shoal, in all about 100 feet long, about 40 feet wide and about 3½ feet deep, the material removed being 6,340 cubic yards, composed of sand and hard clay.

TIGNISH.

Tignish harbour, Prince county, is on the northeast coast of the island about 8 miles south of North cape, being situated at the mouth of Tignish river, a small stream there entering the Gulf of St. Lawrence. Formation of a harbour at the place was first commenced by the provincial government in 1868 and has since been continued by the Dominion government, as described in departmental reports, 1899-1900 and 1908-9-10-11, until now consisting of piers or breakwaters on either side of the river's entrance and inwardly, respectively, about 1,500 feet long on north side and 1,700 feet long on south side, besides which, beach protection works extend from the inner ends of the breakwaters over the low beaches for purpose of preserving the position of the channel.

Of late years, the outer end of the north breakwater, having become much damaged and defective through age and action of ice, storms and the 'teredo,' and parts of beach protection works through age completely decayed and carried away, it had been proposed with sum of $5,000, appropriation at last session of parliament, effecting their repair, but as with the five-twelfths expenditure of this amount, as was authorized, it was not advisable, as intended, undertaking reconstruction of the outer block of the breakwater, only repair of some of the inner portions and that of the beach protection works were taken up; these were first commenced September 5, up

to November 23, 1911, while the work done consisted of renewal of the floor-stringers and covering on the outer 150 feet length of the northern breakwater inward of its outer block; construction of a crib-work 'sand-break' on its northern side, 250 feet long and 15 feet wide, and reconstructing different portions of the beach protection works, in all about 400 feet long. The expenditure on all of which was $1,312.21.

TRACADIE.

Tracadie harbour, Queens county, is situated on the north side of the island, about 12 miles east of Rustico harbour; by road it is about 6 miles from Bedford station on line of the Prince Edward Island railway and about 14 miles from Charlottetown, the capital of the province.

With the view, if possible, of improving this condition and rendering the place of better service, a contract was entered into August 24, 1910, with Mr. F. D. MacDonald, for sum of $24,546, for the construction of a breakwater, 1,000 feet long, to extend from the east side of the entrance.

Materials having been got out during the winter of 1910-11, commencement of the work was made June 5, 1911, and construction continued in progress up to December 1; some delivery of ballast was also done up to January 31, 1912.

The work done consisting of pile-work and timber inner length of 450 feet complete; adjoining 150 feet, outward, bearing piles driven; walings and cross-heads on and part close-piled and ballasted, this all 18 feet wide; then for further 140 feet outward bearing-piles driven, part of walings on north side close-piled and cross-timbers on; the value of the work, in proportion to contract price, estimated at $14,960.

The expenditure for the fiscal year was $13,853.50.

WOOD ISLANDS.

Wood islands, Queen county, are situated about 30 miles southeasterly from Charlottetown and about 15 miles west of Cape Bear, being the most southerly part of Prince Edward island.

Portions of the covering on the northern work, which is used as a landing and shipping place, having become unsafe, through age, was repaired at a cost of $145.84, during the month of September last.

For proposed further improvement at the harbour, a contract was entered into March 4, 1912, with Messrs. Compton and Ross, for a bulk sum of $7,036, for an extension of 100 feet to the southern breakwater, and materials are now being procured.

NEW BRUNSWICK.

ANDERSON'S HOLLOW.

At Anderson's hollow, in Salisbury bay, on the coast of Albert county, there is a breakwater and wharf 570 feet in total length, and generally 25 feet wide on top, built of round crib-work, and sheathed on the weather face. Spring tides rise 40 feet.

During 1911-12, one hundred and sixty-two (162) lineal feet of cap timber, 12 inches square, were laid on the work, together with 41 pieces of heavy covering. The ditches along the road leading to the wharf were cleared out and the road was graded for a distance of 430 feet.

Work begun August 24, and closed September 18, 1911, but was not carried on continuously.

Expenditure during fiscal year is $115.74.

BACK BAY.

Back bay, a fishing station about four miles west of l'Etang, and two miles east of l'Eteté, is situated on an arm of l'Eteté harbour. Spring tides rise 24 feet.

At Back bay, the provincial government built a wharf of crib and trestle work, 239 feet in extreme length, extending nearly to low water mark. An extension of 86 feet, giving a depth of 8 feet at low water, was added by the department in 1900-01.

During 1911-12, new stringers and covering were placed for a distance of 113 feet from the inner end of the approach.

A new cap was laid on each side, and for 36 feet farther. From the foot of the incline, to the back of the pier-head, new covering was laid. The pier-head, 50 by 30 feet, was also newly covered. Thirty-one fenders were placed on the sides of the approach. The landing stage was put in position and secured.

Work was begun September 16, and completed December 19, 1911; was carried on during October, November and December, 1911, but not continuously.

The expenditure for the fiscal year was $824.32.

BATHURST.

Bathubrst is the shiretown of Gloucester county, and an important lumbering centre. About seventeen miles from the town are the extensive Nopisiquit iron mines from which large shipments are now made.

During 1911, 11,240 feet B.M. of two-inch plank was laid over the old covering of the public wharf, which was worn, and a broken stringer was replaced. Work was in progress between the 11th June and the 10th July.

The expenditure for the fiscal year was $283.73 and $12,976.66 for dredging.

Dredging.

The government dredge *Restigouche* (formerly *Nereus*) was at work during the past season between the 15th May and the 11th November on the bar outside Bathurst harbour and on two shoals, the Seal bar and Ballast bar, inside. A total of 146,777 cubic yards were removed, of which 11,940 cubic yards were removed from the points inside. At the outer bar, the cut is now 1,700 feet long, of which the outer 900 feet is 200 feet wide with depths of about 24 feet and over. In the next 200 feet, the width decreases from 200 to 100 feet and the depth is 20 to 23 feet. The remaining 600 feet is from 75 to 50 feet wide and has depths of 17 to 20 feet at low water.

BAY DU VIN.

A farming and fishing settlement on Miramichi bay, 20 miles east of Chatham and a point of call for the daily river steamer.

During 1911, the covering of the public wharf was repaired over a length of 120 feet, 2,354 feet B.M. of new 3-inch plank being used, and 201 lineal feet of 8 by 8-inch cap timber was placed along the sides of the wharf near the shore end.

The work was in progress between the 9th and 15th August.

The expenditure was $95.64.

BAYSIDE.

Bayside is situated on the east side of the St. Croix river, about 4 miles from St. Andrews, and 18 miles from St. Stephen.

Spring tides rise 25 feet.

During 1911-12, the Department built, by day labour, a new pile wharf, 20 feet wide and 85 feet in total length, including a pier-head 40 by 30 feet, standing in 9 feet at high water. A stone approach 15 feet long and 20 feet wide was also made.

Work was begun September 9 and completed December 12, 1911, but not carried on continuously.

The expenditure for the fiscal year was $1,557.38.

BEAUMONT.

A settlement on the Petitcodiac river about 4 miles above its mouth. Farming, freestone quarries and the shad fishing provide occupation for the inhabitants.

During the year, tenders were asked for a small wharf at Beaumont and a right of way to the site was purchased.

The expenditure was $100.05.

BLACK RIVER.

Black river, a small cove in the Bay of Fundy, 12 miles east of St. John, where ordinary spring tides rise about 25 feet, a breakwater or wharf of square crib-work, 155 feet long and 27 feet wide, standing in 23 feet at high water, was built by the department in 1879, for the use of coasting vessels.

The upper works have become decayed from time, and it is proposed to renew them from high water up.

During 1911-12, part of the timber and iron were procured, but no work was done.

The expenditure for the fiscal year was $737.09.

BLACK RIVER.

Wharf.

The Black river is a small stream entering Buctouche harbour about a mile to the north-east of the village of Buctouche. Large quantities of fish are brought to the highway bridge near the mouth of the river where many teams from the surrounding country come for supplies.

The construction of a wharf for a landing place for boats was therefore begun in 1911-12, and was in progress between October 2 and 19, October 27 and 31, and November 6 and 11, when one block 20 by 20 feet was built up to full height, and the pier-head 30 by 30 feet, was built to within one tier of the top. The covering was laid on the block and on the span, about 12 by 20 feet, connecting the block with the highway bridge.

The expenditure for the fiscal year was $606.52.

Dredging.

Between April 3 and 11, 1911, dredging by day labour with mud-diggers was in progress in the channel above the highway bridge to give a passage for small boats and for fish to cross a bar which has formed in late years. The cut is about 8 to 10 feet wide, 4 to 6 feet deep and 920 feet long, of which 700 feet was excavated in 1910-11, and the whole expenditure was charged to that year.

Between February 14 and March 23, 1912, dredging was in progress in the same manner across the shoals in the channel between the bridge and Buctouche harbour.. A basin was excavated at the new wharf 185 feet long by 40 feet wide and the cut was continued 585 feet with a width of 10 feet. The cut averages 2½ feet deep to give a depth of 4 feet at low water.

The expenditure for the fiscal year 1911-12 was $877.58.

BUCTOUCHE BEACH.

Buctouche beach, Kent county, 6 to 7 miles long, separates Buctouche harbour from the Northumberland strait. The harbour entrance is at the southern end of the beach. At the northern end, it is proposed to cut a channel through the beach to

give a short passage from the harbour to the fishing grounds and to provide shelter for the boats on the outer shore. Breakwaters and breastworks have been constructed on each side of the proposed canal, which will be about 950 feet long at high water level and about 40 feet wide.

Work was in progress during the fiscal year 1911-12, between October 2 and November 24, and consisted of placing about 3 feet of brush and stone in the outer 66 feet of the south and the outer 150 feet of the north breakwater; repairing the breastworks running northward along the beach by driving 363 pickets and placing about 24,000 cubic feet of brush, together with some ballast, in the work over a length of 1,074 feet. Seaweed was also used as filling and for a length of 640 feet the sides were banked with sand. Seaweed was also placed in the pile breastworks along the canal to prevent sand passing into the latter.

The expenditure for the fiscal year was $684.19.

Dredging.

On September 7, 1911, a contract was entered into with Mr. Peter England for dredging a canal from the north end of Buctouche harbour to the Northumberland strait across Buctouche beach.

Work began November 4 and was continued until November 21, in which time 1,733½ cubic yards were removed in making a cut 400 feet long, 20 feet wide and 6 feet deep.

The total dredging authorized under the contract is 27,000 cubic yards.

The expenditure for the fiscal year was $467.90.

CAMPBELLTON.

Campbellton is situated on the southern side of the Restigouche river, 16 miles above Dalhousie and 6 miles below the head of the tide. It is a divisional point on the Intercolonial railway and the terminus of the International railway. Last year, Campbellton rose to second place among New Brunswick ports in the shipment of deals. Its population was 3,816 in 1911 against 2,652 in 1901.

Work on the deep water wharfs was in progress between July 13 and August 16; November 27 and December 30, and March 4 and 29, and consisted of close-piling about 100 feet of the easterly side of the approach and about 120 feet of the curved crib-work between the approach and deep water berths proper; this to prevent damage to the wharfs from dredging. The curved crib-work which had settled was levelled up in a length of 130 feet with face-timbers and cross-ties. Two spans in the deep-water wharfs, about 15 feet wide, were closed by driving two rows of piles 18 feet apart and filling between them with brush and stone. About 2,900 feet, B.M., of new 4-inch plank was laid over the spans. A total of about 295 piles were driven.

Surveys were made and plans are in course of preparation for increased deep water wharf accommodation.

Market Wharf.

The crib-work of the new pier-head 75 by 70 feet at the Market wharf, which is intended for coal schooners, tugs, fishing boats, &c., was built during 1910-11. Work was resumed on the pier-head on August 18, 1911, and continued until about October 7, when an extra tier of round-logs was placed on account of settlement of the crib and the latter was filled with ballast. Stringers, covering, and cap were placed and 138 close-piles were driven around the outside. Eleven sticks of timber were placed on the approach to bring it level with the new work, but the levelling was not completed; timber and ballast for this purpose were procured towards the close of the fiscal year.

CAMPBELLTON —*Continued.*

Ferry Landing.

Between June 17 and 21, 1911, repairs were made on the Ferry slip, which was damaged during the conflagration in the preceding year. The crib-work, stringers and covering were renewed on a section 16 by 50 feet on the easterly side, and the covering over an area of about 10 by 30 feet on the westerly side.

The cost of the repairs was $148.09 and is included in the expenditure of the Market wharf.

Dredging.

Between the 20th June and 8th August dredging was in progress under contract with Messrs. A. & R. Loggie at the Deep Water wharfs at Campbellton, as follows:—

1. At the steamer berths for a length of 642 feet along the inside and 976 feet along the outside, measured from the lower end of the wharfs, to remove the banks close in which the government dredge *St. Lawrence* could not reach, to a depth of 22 feet at L.W.O.S.T. The width of the cut was 20 to 40 feet, averaging 35 feet.

2. Continuing the dredging along the inside of the wharfs a further length of 245 feet for a width of 35 feet to 60 feet and a depth of 14 feet at L.W.O.S.T. for a schooner berth. This berth reaches the easterly side of the approach to the wharfs.

3. Dredging a schooner berth across the upper end of the wharfs to a depth of 10 feet at L.W.O.S.T. for a width of the wharf, *i.e,* 75 feet, 40 to 50 feet wide, and sloping up to the original depth of the bottom at a point 35 feet inside the inner face.

The total quantity removed was 1,055 cubic yards, place measurement, which includes 375 cubic yards, the equivalent of the removal of a number of logs, &c.

The government dredge *St. Lawrence* was also at work between July 4 and September 13 in the channel on the range of the Cambellton lights, where in a length of 2,500 feet, between one half and one mile below Deep Water wharfs, a cut was made about 200 feet wide and 15 to 19 feet deep at low water. The quantity removed was 40,040 cubic yards.

Again between September 13 and November 18 in the berths and approaches at the government wharf where a cut was made 1,700 feet long. Of this, the upper 300 feet was inside the wharfs with a width increasing from zero to 150 feet, and with 16 to 22 feet at low water. The remaining 1,400 feet, extending below the wharfs on the line of the Campbellton lights, has a width of about 100 feet and a depth of 16 to 18 feet at L.W.O.S.T.

The quantity removed here was 31,500 cubic yards, making a total for the *St. Lawrence* for the season of 71,540 cubic yards.

The assumed range of spring tides at Campbellton is 10 feet.

The total expenditure for repairs and dredging during the fiscal year was $30,465.37.

CAPE BALD.

Cape Bald, Westmoreland county, is a well settled fishing and farming district on the Northumberland strait, about 14 miles east of Point du Chene, the nearest railway point, and 38 miles west of Cape Tormentine.

The construction of a breakwater was begun on the 6th June, 1909, under contract with Mr. E. A. Walberg and the work was practically completed at the end of 1910. It is 646 feet long on the north or outer face of the approach and 623½ on the inner face. The pierhead is 100·4 feet long on the outer and 72½ feet on the inner face. The width of the approach is 16 and 21½ feet, of the pierhead 30½ feet. The breakwater is built of crib-work with concrete faces.

After the forms were removed, a number of large holes and imperfections appeared in the concrete faces and the scouring of the bottom by waves left vacancies under the concrete. These have been filled and repaired during 1911 in a length of 400 feet on the outer face and 500 feet on the inner face of the approach. A displaced crib which lay outside the pierhead and was a danger to vessels was removed with dynamite. This work was in progress between August 1 and September 30; October 12 and November 25, and from February 27 to March 30, the expenditure being chargeable to the contract.

Between August 21 and 31, and from September 4 to October 28, 1911, work was in progress on a reinforced concrete wavebreak 3 to 4 feet high, 10 inches thick at the top and two feet at the bottom, along the outside of the breakwater over the original concrete curb, which was 12 by 12 inches. This wave-break was completed for a length of 440 feet. About 25 tons of large stone were placed in the angle between the breakwater and the shore, and the stone covered with concrete.

The total expenditure for the fiscal year 1911-12, was $3,079.28.

CAPE TORMENTINE.

Cape Tormentine, Westmoreland county, is the terminus of the New Brunswick and Prince Edward Island railway and the nearest point of communication between Prince Edward Island and the mainland, which are there nine miles apart.

Between 1886 and 1892, a breakwater pier 3,300 feet in total length was constructed by the Department to assist communication with the island. The pier also affords a harbour from which large lumber shipments are made to over-sea ports.

Between September 20 and October 10, 1911, small repairs were in progress consisting of repairing and renewing mooring posts; filling parts of the cribs, where ballast had settled, with stone, &c.

The expenditure for the fiscal year 1911-12, was $245.57.

Dredging.

Between July 4 and September 12, dredging was in progress, under contract with the General Construction and Dredging Company, over an area of 200 to 370 feet wide and 360 feet long in the basin formed by the approach, pierhead, and 'return' or 'L' of the breakwater; the greatest width being next the inner face of the pierhead, the principal steamer berth.

The dredged area is continued 100 feet shorewards beyond the inner end of the return in order to allow vessels to pass around the end of the latter when leaving or approaching the basin. At the shore end of this extension, the area dredged is about 200 feet wide. The total area dredged was about 131,000 square feet. The dredge was unable to reach the required depth, 18 feet, over the whole area on account of a ledge of rock in the centre of the basin. The berths close to the pierhead and return were dredged to about 18 feet at low water ordinary spring tides, or $25\frac{2}{3}$ feet at high water ordinary spring tides.

The material removed amounted to 27,370 cubic yards, place measurement, and the expenditure to $11,083.04.

CARAQUET.

Dredging.

Caraquet, Gloucester county, is an extensive and prosperous fishing settlement, 42 miles by rail east of Bathurst and lies on a fine harbour sheltered by Caraquet island and a point of the mainland from the Baie des Chaleurs.

Dredging has been in progress in 1910 and 1911, under contract with the W. J. Poupore Co., at the berths and approaches to the deep water wharf constructed by the department in 1902-05, for the shipment of lumber from Gloucester county, and on a shoal in the channel, to enable deep draught vessels to use the wharf. Dredging was begun in the channel in 1906 by Messrs. A. & R. Loggie.

The berths at the wharf are 300 feet long and 60 feet wide on each side of the pier-head and dredged to 21 to 23 feet at low water spring tides, the range of tides being 6 feet. The original least depth was about 13 feet at low water. 4,378·89 cubic yards were removed here in 1911.

Outside the pier head and in the approaches to the latter, 2,630·26 cubic yards were removed in 1911. There still remains a strip about 100 feet wide with only 17 to 18 feet at low water beween the wharf and deep water. The original least depth was 15·2 feet.

From the bar in the channel, where originally the least depth was 15·3 feet, 55,856·76 cubic yards were removed in 1911. The cut there is now about 70 feet wide for a length of 900 feet and about the full width required, viz.: 200 feet for a length of 2,000 feet, the depth averaging about 22 feet. Of this cut, a length of 1,400 feet 70 to 150 feet wide was dredged in previous seasons. To reach the 18-foot contour, the cut must be extended about 1,000 feet westerly, there being a least depth over this area of about 16½ feet at present.

On September 18 to 20, 1,007 cubic yards were removed in enlarging the berth inside the pierheads of the old public wharf where 12 feet at low water was asked.

The dredge *Prince Louis* was employed between May 31 and October 11 and the *Prince Ito* between July 17 and 22.

The expenditure for the fiscal year 1911-12 was $18,046.52.

CHANCE HARBOUR.

Chance harbour is a cove, one-half mile at the mouth, about 350 yards broad at the head, and three-quarters of a mile long. The place is situated 19 miles west of St. John. There are, in the cove, 4 boats. At Chance harbour there is a small inclined breakwater (for a boat landing) of square timber, 187 feet long, 25 feet wide and 18 feet high at the outer end. During 1911-12, the bottom of the pier-head was put together, but before it could be ballasted, a storm washed the incipient work ashore. As storms are likely to occur in the fall of the year, attention was confined to building up the original work, which has been raised 5 tiers at the shore end, and has been benched down to the outer end, where the pier-head is to be built. A new ballast floor has been laid throughout, and 733½ cubic yards of ballast have been placed in the work.

Work was begun August 19 and suspended October 31, 1911; was carried on continuously. The expenditure for the fiscal year was $2,413.11.

CHATHAM.

Chatham, Northumberland county, lies on the southern shore of the Miramichi river, about 20 miles above its mouth. It has a population of about 5,000 and is one of the chief deal ports of New Brunswick.

The public wharf, or Customs House wharf so called, was rebuilt in 1899 to 1902.

During 1911-12, a strip of 4-inch plank 92½ by 9½ feet was laid along the eastern, and a strip 140 by 8½ feet along the western side of the wharf.

The old covering along the outer face was removed and replaced with earth and gravel surfacing, and the decayed cap and upper timber, 140 feet long, along this face, were renewed; 10 new fenders were placed, and the decayed tops of 30 fenders were

renewed; 3 ladders were placed; the cap, fenders, &c., were painted with carbolineum, and the interior of the wharf surfaced with 12 carloads of gravel.

The work was in progress between September 27 and November 22.

The expenditure for the fiscal year was $607.52.

Dredging.

Under an agreement with Mr. Peter England, dredging was in progress in the berths at the public or Custom House wharf, between July 18 and August 8, and between August 28 and October 14, 1911, with the dredge *Peter England.*

The berth in front of the wharf was deepened to about 18 to 20 feet at low water for a length of 192 feet and width of about 25 feet.

The slip at the lower side was dredged to 9 feet at low water for a distance of 60 feet inwards from the outer corner and a width of 70 feet, sloping down towards the outer end to the depth of the front berth.

In the slip at the upper side, a cut 50 feet long and 10 feet wide, and with 2 feet at low water, was dredged for small boats.

The range of spring tides is 6 feet.

3,373·7 cubic yards of mud, gravel, &c., were removed, besides logs and large stones, the removal of which was equivalent to the removal of 604·6 cubic yards of ordinary material.

The expenditure for the fiscal year was $2,384.98.

Dredging at Canada Dock.

Between August 9 and 25, 1911, the berth in front of the Canada dock, the deep water terminus of the Intercolonial railway at Chatham, was dredged under an agreement with Mr. Peter England to remove the bank which had accumulated close to the wharf. This was done by the dredge *Peter England* for a width of 20 to 30 feet and to a depth of 17 feet at low water along the lower 600 feet of the wharf. The material removed amounted to 1,643½ cubic yards.

The expenditure for the fiscal year 1911-12, was $950.05.

CHOCKFISH.

A farming and fishing settlement on the Northumberland Strait about midway between Richibucto and Buctouche.

The works consist of breakwaters at each side of the present river mouth, with breastworks and a dam to close the original winding and unstable channel. Through their construction, the depth of water has increased and a permanent entrance has been provided to a safe and convenient harbour.

During 1911, the outer 150 feet of the north breakwater and outer 100 feet of the south breakwater were refilled with 5 to 7 feet of brush, a layer of stone being first removed and afterwards replaced over the new brush, of which about 48,000 cubic feet was used.

Work was in progress between October 5 and 28, 1911.

The expenditure for the fiscal year 1911-12, was $413.26.

COLE'S POINT.

Cole's Point, Westmoreland county, is situated at the head of Shepody Bay and about 3 miles from Dorchester.

Between June 8 and 10 and on June 29, 1911, decayed and worn portions of the covering of the wharf were removed and replaced with about 5,750 feet B.M. of new plank.

The expenditure was $99.17.

CUMMING'S COVE.

Cumming's cove, a fishing station, lies at the southwest end of Deer island (a part of the County of Charlotte), and is 1½ miles from Fairhaven, and the same distance from Chocolate cove. At Cumming's cove the department, in 1910-11, built a wharf, consisting of a trestle approach, 193 feet long, pile-work 60 feet long, and round crib-work 130 feet long, including a pier-head 50 feet square on top. Excepting the pier-head, the work is 23 feet wide on top. The head stands in about 12 feet at low water, ordinary spring tides. Spring tides rise 24 feet.

During 1911-12, an approach to the wharf, of stone, clay and gravel, was constructed. The freight-shed at the inner end of the wharf was repaired and moved farther out. Fenders were applied to the face of the work, secured with knees, and spring piles were placed at the corners.

Work was begun June 8, 1911, and suspended March 13, 1912, was carried on during June, 1911, and February and March, 1912, but not continuously.

The expenditure was $2,820.24.

DALHOUSIE.

Dalhousie, Restigouche county, lies at the head of the Baie des Chaleurs and at the mouth of Restigouche river, 16 miles below Campbellton. It has a population of 1,650 and is an important deal port.

On September 9, 1911, a contract was entered into with Mr. T. P. Charleson for the construction of a breakwater along the easterly side of the Ferry basin, between the mainland and Douglas island. The contract price is $23,440. The total length of the breakwater will be 1,000 feet and the width on top 27 feet.

Work was begun on October 14, and at the end of the fiscal year, 1911-12, the approach at the mainland shore, 100 feet long, consisting of a stone embankment, was ready to receive the timber superstructure, cross-ties, stringers and covering. About 400 piles were driven in the next, or pile-work section, 750 feet long. The eastern or island approach of crib-work was built up ready to receive the stringers. About 402 cubic yards of large stone were placed to form a talus outside the pile-work. A quantity of materials were on hand for the continuation of the work.

The expenditure for the fiscal year, 1911-12, was $7,919.88.

Deep-water Wharf.

Work was in progress between August 28 and October 6, on the construction of a warehouse on the deep-water wharf.

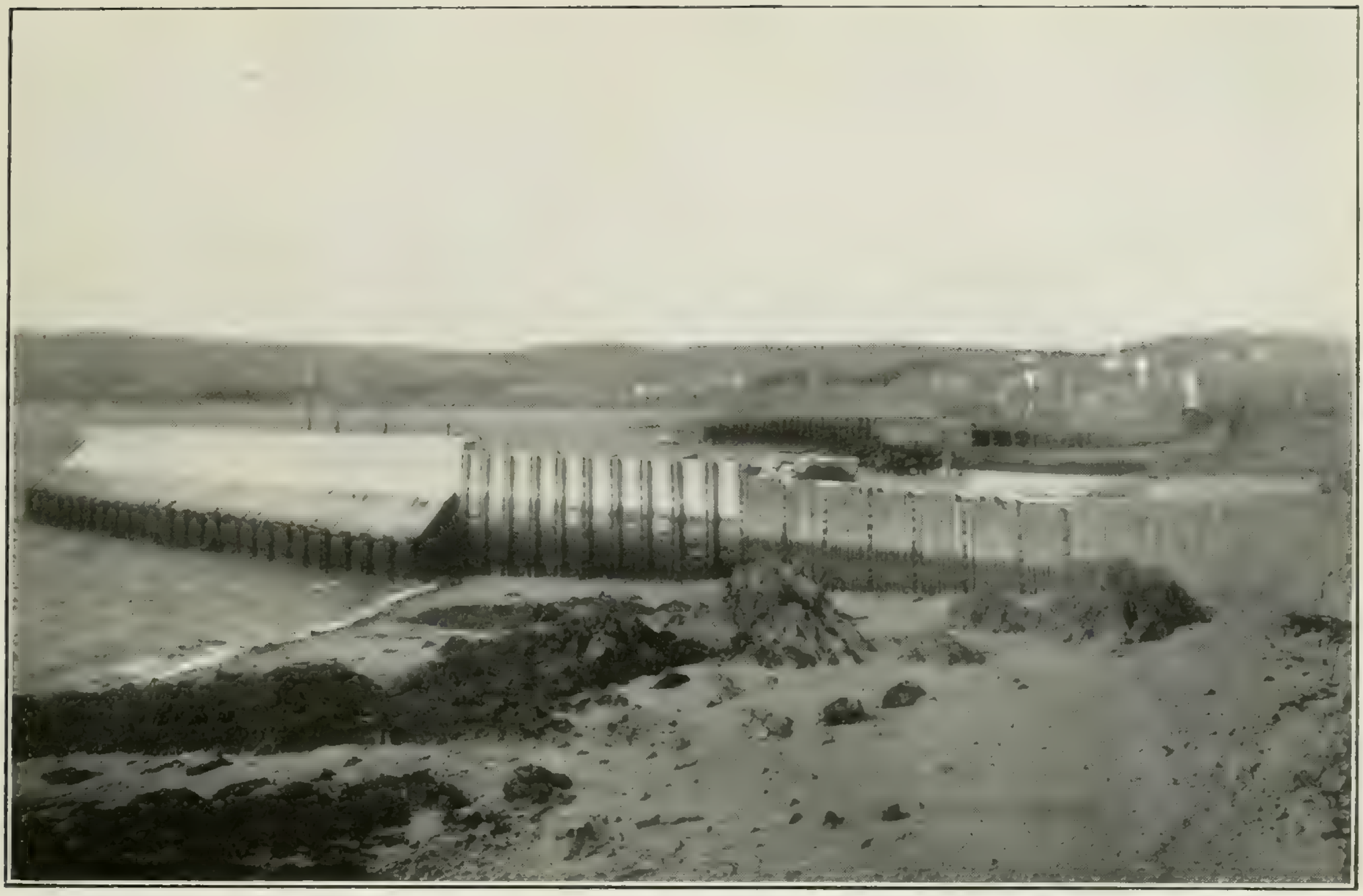
The building is 30 feet 5 inches by 50 feet 5 inches, and has a pitched roof of rough boards and shingles, and side walls and ceiling of matched sheathing is built in one corner of the warehouse for an office or waiting-room.

The expenditure for the fiscal year, 1911-12, amounted to $557.64.

Dredging.

Dredging was carried on by Messrs. A. & R. Loggie in the Ferry basin during 1911, between July 12 and October 7, in continuation of their contract of the preceding season.

Between July 17 and September 5, the mud, amounting to 5,635 cubic yards, was removed from a strip 500 feet long and 75 feet wide on the easterly side of the Dalhousie Lumber Company's wharf down to about 19 to 20 feet below low water level or to rock, and 446 cubic yards of rock were blasted and removed by dredging.



Breakwater at North Head, Grand Manan, N.B., at low tide.



Breakwater at North Head, Grand Manan, N.B., at low tide.



Breakwater at Seal Cove, N.B., at low tide.

A parallel strip about 400 feet long and 75 feet wide, 75 feet southerly from the Dalhousie Lumber Company's wharf and running in to the Ferry wharf, was dredged between September 11 and October 7 to the same depth, 5,073 cubic yards of mud being removed and 508·8 cubic yards of rock were blasted and dredged. During this period also, a berth along the easterly side of the Ferry wharf, 200 feet long, measured from the outer end of the pier-head inwards, and 75 feet wide, was dredged to a depth of 12 feet at low water. 5,000 cubic yards of mud were removed here.

In addition, old logs and timbers were removed equivalent to dredging 86 cubic yards of ordinary material.

The total work for the season under the contract was, therefore, 15,794 cubic yards of mud and 974·8 of rock.

The expenditure for the fiscal year, 1911-12, was $12,879.68.

DIPPER HARBOUR.

Dipper Harbour is a fishing station on the Bay of Fundy, 20 miles west of St. John. Spring tides rise 24 feet. In 1906, a breakwater, 335 feet long, from 28 to 38 feet in width, and 43 feet high at the outer end, was built to give shelter to fishing boats.

To this work, an addition of close-faced crib-work, 100 feet long and 38 feet wide on top, was begun in 1911, and by January 6, 1912, was brought up to the 41st tier at the inner end, or to 4 feet below high water.

On January 9, 1912, the work, then incomplete, was shifted slightly from its position by a heavy storm, and settled about 2½ feet. No damage was done to the block.

Work was begun May 22, 1911, and suspended January 6, 1912, and was carried on almost continuously. The expenditure, including dredging, during the fiscal year, was $43,537.97.

Dredging.

In order to give 4 feet more at the proposed extension of the wharf at Dipper harbour, a basin 275 feet in extreme length and 132 feet wide, approached by a channel 550 feet in mean length and 100 feet wide, to 13 feet at low water, was begun and almost completed. In addition to this, the people asked that a basin 300 feet wide to 8 and 13 feet at low water, should be dredged for an anchorage for fishing vessels. This work is partly finished. The following results, obtained from the first examination of the work done, have been disputed. The results of the second have not yet been worked out. According to the first, the quantities are:—

Channel—	Cubic yards.
Authorized quantity	16,000
Quantity excavated, inspector's returns	15,993
Dredging beyond proper limits	3,463

Material: brick clay, sand, gravel and mud.
Work begun July 11, 1911; ceased December 9, 1911.

Basin—	Cubic yards.
Authorized quantity	35,000
Quantity excavated, inspector's returns	35,044
Dredging outside proper limits	12,906

Material: mud, sand and gravel.
Work begun September 18, 1911; ceased January 23, 1912.
Contractor, J. S. Gregory, St. John, N.B.
Dredges, *Asp* and *Keta*.
Contract prices: Ordinary spoil, channel, 65 cents per cubic yard; ordinary spoil, basin, 50 cents per cubic yard.

DORCHESTER.

Dorchester is the shire town of Westmoreland county, and a station on the International railway, 27 miles south-east of Moncton.

In 1909, this Department constructed a wharf 202 by 52 feet on the Memramcook river at Dorchester. The old railway wharf adjoining, with a frontage of 200 feet was taken over from the Department of Railways and Canals in 1911.

Work was in progress between May 10 and 20 in removing about 2 feet of mud over an area of about 25 by 100 feet on the inner bed at the wharf.

Between May 1 and 17, the outer bed was widened with cribwork 70 feet long 10 feet wide and three tiers high, and the mud deposited on the inner part of the bed during the winter was removed to make a level berth for steamers.

Between April 4 and 7, October 5 and 17, and December 14 to 16 also, work was done in levelling off the outer bed and in extending it 25 feet southerly and 20 feet northerly, to allow steamers to dock.

The expenditure for the fiscal year is $656.26.

DOVER.

Dover is a farming settlement on the Petitcodiac river about 10 miles below Moncton. Lumbering and fishing are also carried on to some extent.

At Steeves' Landing, Dover, a wharf was constructed in 1909 and 1910, for a landing place for the river steamer and the shipment of lumber and produce.

Between September 23 and October 31, 1911, the roadway to the wharf, which formerly was unfit for hauling over in wet weather, was drained by a ditch 195 feet long and 3 feet 9 inches deep, in which were placed 4-inch drain tiles covered with about 2 feet of stone. The road was ploughed and surfaced and 25 cubic yards of gravel spread over it.

The expenditure for the fiscal year was $89.28.

ESCUMINAC.

During 1911, surveys were made and contract plans prepared for a breakwater at Escuminac, a considerable fishing and farming district on the south side of Miramichi Bay, about 40 miles east of Chatham.

Tenders were asked for the work, but on account of a disagreement as to the site of the breakwater, the contract was not awarded.

FAIRHAVEN.

Fairhaven, Deer Island (a part of the County of Charlotte), is 7 miles from St. Andrews. At this place, the Provincial Government built, some years ago, a wharf 190 feet long, of trestle work, now being repaired by the local authorities. The people ask that a crib-work pier head, 50 by 32 feet, standing in 6 feet at low water, should be added to this work. There is at present no pier-head.

In 1911-12, no foreman was appointed, and there seemed to have been some question about the transfer of the work to the Department. Plans and specifications for the construction of the work by contract are being made.

GARDNER'S CREEK.

Gardner's Creek enters the Bay of Fundy some 20 miles east of St. John harbour. Spring tides rise 30 feet. The combined breakwater and wharf, 215 feet long,

is built of open-faced, square crib-work, sheathed on the north and east sides. The head stands in a depth of 21 feet at high water, ordinary spring tides. Repairs to the upper works, comprising renewal of break, covering, stringers and two tiers of face timbers, are required.

During 1911-12, all the timber necessary for repairs has been procured. Beyond this, no work was done.

GOOSE CREEK.

Goose Creek 22 miles east of Quaco. A beach about 100 feet in width at high water, and 1,600 feet long, shelters a pond 1,800 feet by 900 feet, dry at low water. At the eastern end of the beach, an entrance with 15 feet at high water, gives access to the pond.

The beach being in process of denudation, a protection of piles and plank was begun in 1911-12. Three hundred and thirty piles were driven, extending over a distance of 682 feet, without reckoning the groyne which is 94 feet in length. For a distance of 206 feet along the main work, from one to six rows of planking have been placed. The pile groyne was planked and backed with brush and stone. As the pile work was not satisfactory, timber, iron, &c., have been procured, and preparations have been made for the construction of 146 feet of crib-work.

Work was begun July 11, 1911, and suspended March 29, 1912, but not carried on continuously.

The expenditure for the fiscal year amounted to $4,067.50.

GOOSEBERRY COVE.

In 1911-12, at the settlement called Gooseberry Cove, 23 miles by road and 14 by water west of St. John, a wharf of round crib-work was begun in White Rock cove.

The work, intended to be 176 feet long, is at present 123 feet in mean length. It has been brought up to high water and is partially ballasted. Part of the timber for completion of the work has been purchased.

Work was begun August 15, and suspended October 28, 1911, and was carried on almost continuously.

The expenditure for the fiscal year amounted to $2,603.49.

GRAND ANSE.

Grand Anse, a station on the Caraquet railway, and a fishing and farming settlement of about 800 inhabitants, is situated on the southern shore of the Baie des Chaleurs, 28 miles northeast of Bathurst. The construction of a breakwater for the protection of the fishing boats was begun here in 1876.

Work was in progress in 1911, between June 26 and July 27, between August 28 and September 7, and on September 16 and 18, in quarrying about 126 cubic yards of large granite blocks and depositing them to form a talus along the outside of the pier-head of the breakwater and in replacing nine fender piles which were carried away by a storm.

In September, a quantity of materials were procured for the construction of a groyne or easterly pier to give better shelter inside the breakwater and to retain the littoral drift which was formerly carried into the basin or dock. This work was under construction between October 2 and 25, when a length of 81 feet was built 10 tiers high and a further length of 32 feet to a height of 8 tiers. About 4 tiers of timber

are still required over the total 113 feet. The width on top will be 12 feet, and length, as now proposed, 350 feet.

During February and March, material for the continuation of the work was purchased.

The expenditure for the fiscal year, 1911-12, was $2,198.39.

GRANDIGUE.

Grandigue is a fishing and farming settlement situated at the northerly end of Shediac harbour and about 7 miles by road northerly from Shediac.

On September 9, 1911, a contract was entered into with Mr. T. P. Charleson for the construction of a wharf at Grandigue to be 350 feet long and to consist of blocks and spans 15 feet wide and a pier-head 30 by 30 feet. Beyond the shore block, the work is to be sheathed or close-piled with creosoted plank to prevent destruction by marine worms which are active in Shediac harbour. The contract price is $5,894.

Work began January 15, and by the end of the fiscal year the crib-work was built complete and filled with ballast and the stringers and mooring posts were placed.

At different times during June, August, September and October, 1911, work was in progress in grading, ditching and fencing on one side, the new road, about 1,400 feet long, from the highway to the site of the wharf. Two small culverts were built.

The expenditure for the fiscal year, 1911-12, was $3,200.68, of which $227.81 was expended on the day labour work.

GREAT SALMON RIVER.

Great Salmon River is a small tidal inlet 8 miles east of Quaco, and 43 miles east of St. John. Shipments of lumber are made from this place. Spring tides rise 30 feet. A small harbour, dry at low water, is formed by the projection of a beach from the west side, a narrow opening remaining for an entrance. To keep open this entrance, a pier has been built on the west side, which is 372 feet long.

During 1911-12, an eastern pier of round crib-work, 316 feet in total length, measured on the centre line, was built, by contract, for the protection of vessels, for the purpose of keeping the opening scoured. The work is 14 feet wide on top for a distance of 55 feet from the shore, and for the remaining distance, 261 feet, it is 20 feet wide. It is not intended to be used as a wharf.

By day labour, 42 feet of the west pier were close-piled, and 30 feet were underpinned.

Contract work was begun May 25, and completed November 29, 1911.

The day labour was begun March 26, and completed March 28, 1912.

The expenditure for fiscal year was $13,010.48.

GREEN POINT.

Green Point is a fishing and farming settlement of about 200 to 300 inhabitants on the southwestern shore of the Baie des Chaleurs, 18 miles north of Bathurst.

During 1911-12, surveys were made and contract plans prepared for a breakwater at this place and tenders were called for, but owing to a disagreement as to the site the contract was not let.

HARVEY BANK.

Harvey Bank is on the coast of Chignecto bay, near the town of Albert; it is intended to construct an extension to Dow's wharf, to be built of round crib-work, 125 feet long and 44 feet wide, including a pier-head, 65 by 25 feet. There will be a depth of 20 feet at high water at the pier-head.

It is proposed to raise the wharf 2 feet, since some unusually high tides have flooded the work.

During 1911-12, it was found impossible to procure timber at Harvey Bank, and work was not commenced.

HOPEWELL CAPE.

The wharf at Hopewell Cape, on the Petitcodiac, 7 miles below Hillsborough, is of round and square crib-work, 460 feet long and from 22 to 35 feet wide, with a pier-head, 35 by 50 feet. The depth at the outer end is 41 feet at high water, but it is dry at low water.

During 1911-12, the covering was patched for a length of 210 feet in the trestle work, and for 166 feet on the wharf. Small repairs were made to the steps, and the road approaching the wharf has been ditched for 160 feet and turnpiked. On October 4, work on this wharf was suspended. Work was begun September 28, and suspended October 1, 1911.

KOUCHIBOUGUAC.

Kouchibouguac harbour is entered by a narrow passage or gully between long sand beaches which separate the wide expanse of the harbour from the Northumberland Straits. The entrance is about 12 miles north of Richibucto and 18 south of Miramichi bay.

Of late years new gullies have opened up which, by reducing the current in the main entrance, tend to lessen the depth of water at the latter. The work of closing the new gullies and raising the low parts of the beach with breastworks to prevent further breaks began in 1908-9.

Work was in progress between August 18 and September 26, 1911, on the construction of a dam across a new gully cut through the beach by a storm in November, 1910, and of breastworks along the beach; 175 pickets were driven for the breastworks; 54 piles were driven a distance of 215 feet for the dam, and the deepest part for a length of 60 feet was filled with brush mattresses 20 feet wide and about 8 feet high weighted with stone.

In November 1 to 4, and in March 4 to 30, the work was continued, when the piles and brush on hand were placed out of the reach of storms; about 144,000 cubic feet of brush and 1,000 pickets were cut and hauled to the beach, and 1,000 additional pickets were cut; a mattress 40 feet long was built in the dam, and 50 cubic yards of stone were hauled and placed in the work, and 16 piles which were being hauled out by the ice were re-driven.

The expenditure for the fiscal year was $2,450.26.

LAMEQUE.

Lameque is a point of export for fisheries of Shippigan Island to the value of about $75,000 annually, and a landing place, daily during the season, for the steamers of the Gloucester Steam Navigation Company. A wharf was built by the Department in 1900-03.

Work was in progress between May 3 and July 1, 1911, on the warehouse begun last year on the pierhead. The lower floor was divided by two partitions into salt stores and warerooms, and, upstairs, an office and waiting room were built. Four large sliding doors were hung, and two panel doors and two sets of double doors put in. Two sets of stairs and two platforms for landings were built. Saddle boards were placed on the roof and mouldings along eaves and gables, and the whole outside of the building was painted with carbolineum. Four new fenders and 65 lineal feet of cap timber

were placed along the front of the wharf and some projecting crossties were sawn off.

Work was also in progress between August 29 and September 20, and between September 27 and September 30, when a strip 990 feet long and 9 to 11¼ feet wide of 2-inch plank was laid longitudinally over the old covering of the wharf which was much worn and decayed.

27,453 feet B.M. of 2-inch plank was procured towards the close of the fiscal year to lay over the remainder of the old covering.

The expenditure for the fiscal year was $1,451.41.

LEONARDVILLE.

Leonardville is a fishing station on the eastern side of Deer Island (a part of the County of Charlotte), 3 miles from Lord's Cove and 2 miles from Chocolate Cove. Thirty sardine boats, from 8 to 12 feet in draught, are owned at Leonardville, in the neighbourhood of which there are 60 families. In 1909-10, a wharf, 303 feet in total length, consisting of a trestle approach, 143 feet long; a pile approach, 120 feet in length, and a crib-work pierhead 60 by 40 feet, was built by the Department.

During 1911-12, the construction of landing steps, begun by day labour in 1910-11, was completed. Twenty-two fender piles have been placed on the wharf. The weight of the floating slip, which had fallen, has been got up, and the chain has been repaired; the iron strap on the slip has been shifted, drilled and secured, and the shaft on the hoisting apparatus has been repaired.

Work was begun May 9, and completed December 12, 1911. The expenditure for the fiscal year is $6,243.54, which includes $3,651.05 for dredging.

Dredging.

The dredging done in 1911-12 consisted in widening the channel, already dredged, to the wharf to 9 feet at low water, and in excavating a channel to the sardine factory wharf, to a depth of 6 feet at low water. The original depth at the shallowest place was 0·2 feet above low water.

	Cubic Yards.
Estimated quantity	15,000
Authorized quantity	7,000
Quantity excavated, inspector's returns	7,230

Material: mud.
Work begun September 7, 1911; ceased September 20, 1911.
Contractors: Maritime Dredging & Construction Co., St. John, N.B.
Dredge: *Beacon Bar.*
Contract price: ordinary spoil, 50c. per cubic yard.

LITTLE ALDOUANE.

Dredging.

The Little Aldouane is a stream flowing into the north-west arm of Richibucto harbour, about 3 miles from Richibucto. About half a mile above the mouth, the highway bridge crosses the river, at which point a wharf for the accommodation of fishing boats was constructed in 1910.

In March and on April 1, 1911, a cut was dredged across a sharp bend in the channel immediately below the wharf, the material removed amounting to 2,367·64 cubic yards.

Between March 20 and 31, 1912, dredging was in progress under agreement with Mr. Fidele Savois to make a cut across a second sharp bend about 2,000 feet below the wharf, and thus to give a straight channel from the wharf to the river mouth. A cut about 330 feet long and 19 feet wide, was completed and a second cut carried out a distance of 75 feet which when complete will give a channel 38 feet wide. The depths reached are from 3 to 4 feet at low water ordinary spring tides.

The work was continued in the fiscal year 1912-13.

During 1911-12, 1,003⅔ cubic yards were removed at the lower cut.

The expenditure for the fiscal year 1911-12, being the total for dredging and inspection at both localities, was $690.10.

LITTLE LAMEQUE.

Little Lameque is a fishing settlement on Shippigan Island about 4 miles northerly by road from Lameque. The value of the codfish and lobster fisheries is about $25,000 annually.

In January and February, 1912, contract plans for a wharf at Little Lameque were on exhibition, but the contract was not awarded until after the close of the fiscal year.

The wharf will be 1,495 feet long and will provide a landing place for fishing schooners and for the steamers of the Gloucester Steam Navigation Company.

LOGGIEVILLE.

Loggieville, a village of about 600 people, is the terminus of the Fredericton branch of the Intercolonial railway. It is situated on the south side of the Miramichi river about 5 miles below Chatham.

During 1911-12, about 1,500 feet B.M. of lumber was used in repairing broken and decayed parts of the covering of the Loggieville wharf.

The expenditure, including the cost of searching the title to the foreshore at Loggieville, was $33.97.

Dredging.

Dredging was in progress at Loggieville between October 21 and November 18, 1911, under contract with the W. J. Poupore Co., with the dredge *Prince Louis* in making a cut from deep water in front of the wharfs across a middle ground to the main channel of the Miramichi river.

The depth in front of the wharfs is 18 to 20 feet and over the middle ground 12 to 15 feet at low water ordinary spring tides. The range of spring tides is 6 feet. The total length of the cut will be 1,480 feet and the width 200 feet.

The area dredged was 770 feet long, of which 240 feet was 100 feet wide and 530 feet 50 feet wide, and the proposed depth is 17 feet at low water. The quantity removed figured to a depth of 18 feet at low water was 5,842½ cubic yards place measurement.

On October 24 to 26, dredging was in progress under agreement with the Eastern Dredging Co., in the berth along the outer face of the wharf, where 2,025 cubic yards were removed from an area about 180 feet by 60 feet to obtain a depth of about 10 to 12 feet at low water.

The expenditure for the fiscal year 1911-12 was, including inspection, $2,248.98.

LORD'S COVE.

Lord's Cove, a small fishing station on Deer Island (part of the County of Charlotte), is a port of call for steamers plying between St. Stephen, St. Andrews, East-

port and other points in Passamaquoddy Bay. At Lord's Cove, the Department began the construction of a wharf in 1900-01, to afford facilities for steamers. The wharf is a pile and trestle work, 328 feet long and 21 feet wide, with a pier-head 50 by 40 feet, standing in 29 feet at high water. The stone approach is 28 feet in length.

During 1911-12, the stringers were repaired, and the old covering was removed and replaced by 3-inch spruce. Iron plates were placed as keepers on the pulleys of the movable slip.

Work was begun September 25, and completed October 15, 1911, but was not carried on continuously.

The expenditure for the fiscal year is $4,683.41, of which $4,495.50 is for dredging.

Dredging.

The dredging done in 1911-12, consisted of a basin 185 by 150 feet, to 10 feet below low water, excepting some shoal patches; and a berth, 165 feet in length, alongside the wharf, to 6 feet below low water. The original depth was, at the shallowest place, 4 feet above low water.

Authorized quantity, 9,000 cubic yards.

Quantity excavated, inspector's returns, 8,925 cubic yards.

Material: mud.

Work, begun, September 22, 1911; completed, October 2, 1911.

Contractors: Maritime Dredging and Construction Co., St. John, N.B.

Dredge: *Beacon Bar.*

Contract price: Ordinary spoil, 50 cents per cubic yard.

LORNEVILLE.

Lorneville is a fishing settlement 10 miles west of St. John. The work, a combined breakwater and wharf, consists of an approach of round crib-work, sheathed on the outside, 300 feet long and 24 feet wide. The pier-head, 100 feet long and 32 feet wide, was detached from the main work by a storm. A sum was placed in the estimates for 1911-12, to connect, with the main work, the damaged pier-head, and to raise it. This work was at first ordered to be done by day labour, but it was afterwards decided to perform it by contract.

During 1911-12, a light was maintained on the damaged work. The right-of-way was fenced, in consequence of a complaint from the owner of the land, through which the right-of-way passes. The work was performed, and the materials were furnished by agreement, by Mr. James McCavour.

The expenditure for the fiscal year is $585.97.

LOWER CARAQUET.

Lower Caraquet is a fishing settlement about 7 miles easterly from Caraquet. A public wharf was constructed here under a contract with Honoré Duguay in 1909 and 1910.

As an extra, under the contract, three ice-breaking blocks were built in the winter of 1910-11. They were completed on April 28, 1911.

On August 29, three additional blocks were begun also as an extra. These were completed on October 26, 1911.

The blocks are 15 to 17 by 20 feet on top and about 33 to 35 by 25 feet at bottom. They are of crib-work, sheathed all around with 6-inch hardwood plank to 13 feet below the top, and have a slope of about 1 to 1 on the side from which the ice-fields come.

LOWER NEWCASTLE.

The public wharf at Newcastle, opposite Loggieville, and about 5 miles below Chatham, was built in 1907 to 1909.

Between April 6 and 15, 1911, two fenders were replaced which had been carried away by ice. Other fenders were bolted and an iron strap was placed around a corner of the pier-head.

The expenditure was $29.43.

MACE'S BAY.

Belas Basin, a cove of Mace's bay, 25 miles, as the crow flies, west of St. John, but farther by road, is defended from the sea by a beach 1,700 feet long but is dry at low water. The work, begun in 1909-10, is a block and span wharf of round crib-work, 156 feet in total length, consisting of 118 feet of crib-work and 38 feet of stone approach, 17 feet wide. The pier-head stands in 14 feet at high water.

During 1911-12, the work was completed.

Work was begun August 21, and completed December 15, 1911.

The expenditure for the fiscal year is $270.64.

MILL COVE.

Mill Cove is on the eastern side of L'Etang river, near the head, and about 6 miles from the harbour of that name. It is about 2 miles from Traynor's Cove. The wharf, proposed to be built at Mill Cove, is to be of round crib-work, 80 feet long and 40 feet wide, with an earthen approach 52 feet long. There will be 11 feet at high water at the head. The wharf is to be built upon the site of an old Provincial Government work.

During 1911-12, the old pier was removed, and timber for the construction of the new work, was procured.

Work of removing the old pier was begun September 15, 1911, and completed November 30, 1911.

The expenditure for the fiscal year 1911-12, is $1,519.46.

MILLERTON.

Millerton is a village and settlement on the south-west branch of the Miramichi river, about 8 miles above Newcastle and 14 above Chatham.

A pulp and paper mill, tanning extract factory, three saw mills and the operations of the south-west Miramichi Boom Co., afford employment for a growing population.

During the fiscal year 1911-12, authority was given for the purchase from the Renous Bridge Lumber Company, of a portion of their wharf with a frontage of 50 feet, for the purposes of a public wharf, and for two pieces of land with a total area of .54 acres for a right of way thereto.

MIRAMICHI BAY.

Miramichi Bay, Northumberland county, is a triangular sheet of water opening into the Gulf of St. Lawrence where the width between Point Escuminac on the south and Tabusintac on the north is about 16 miles. The depth of the bay, from the entrance to Oak Point where the Miramichi river begins, is about 21 miles. Miramichi Bay lies about 60 miles south of the entrance to the Baie des Chaleurs.

A series of long low islands or sand beaches cross the bay from north to south, dividing it into two approximately equal areas, the Outer and Inner bay. The ship channel through the bay is obstructed by three shoals of which the 'Lump,' a sandy ridge in the outer bay, is formed by the meeting of tidal currents from two channels.

The least depth over this shoal at the beginnning of last season was about 17 to 18 feet at low water.

The ship channel passes between Fox and Portage islands near the centre of the bay, at which point the worst shoal, 'The Horse-shoe' occurs. In a length of about a mile, the bottom was formerly a succession of waves or ridges of sand and gravel with a least depth of about 17 feet at low water.

Across the Inner bay, stretches of wide shoal, the 'Grandoon Flats,' with a least depth of about 15½ to 16 feet. The surface is, however, so soft that vessels were not generally stopped here when able to pass over the Horse-shoe.

The shipping entering Miramichi bay is large, amounting to about 550 vessels last year, of a total of 145,000 tons, and the total trade of the river is over $2,200,000 in value.

Dredging has been in progress under contracts with the W. J. Poupore Co., and the Eastern Dredging Co., for the last three season to give a depth of 22 feet at low water ordinary spring tides over the shoals. In the river channel, the depth is about 25 feet at low water to the towns of Chatham and Newcastle, 22 and 27 miles above the mouth.

During 1911, the dredge *Prince Ito,* of the W. J. Poupore Co., worked on the Horse-shoe for thirty days, between May 15 and July 26, in which time 48,226 cubic yards of sand, gravel, &c., were removed. The dredging extended over a length of about 1,400 feet for a width of about 200 to 250 feet at the westerly end of the shoal, and the cut was widened to about 250 feet in a length of about 600 feet at the easterly end. The depth reached varies from about 22 to 24 feet at low water.

The *Prince Ito* also worked at 'The Lump' in 1911 for 43 days, between May 31 and September 8. The dredging extended over a length of about 2,000 feet and width of 300 feet, the depth ranging from 22 to 25 feet at low water ordinary spring tides at the close of the season. The material removed amounted to 58,290 cubic yards.

Under the contract with the Eastern Dredging Co., the dredge *Hayward* worked on the Grandoon flats between May 17 and October 21, and the dredge *Invader* between June 2 and November 4, 1911.

The dredging for the season consisted of extending the inner end of last year's cut about 300 feet or to the Oak Point channel; of widening the entrance to the new channel to about 300 feet; widening 2,000 feet of last year's cut 50 feet, *i.e.,* from 150 to 200 feet in width; widening about 5,000 feet 100 feet, *i.e.,* from 100 to 200 feet in width, and dredging an additional length of 9,000 feet 200 feet wide. The total length of cut is now 17,200 feet. The material removed amounted to 502,319 cubic yards, and the depth reached was about 21 to 23 feet at low water ordinary spring tides.

The expenditure for the fiscal year 1911-12 was $115,391.01.

MISCOU.

Miscou Island, about 9 miles long by 4½ wide, forms the extreme north-eastern corner of the Province of New Brunswick. The population is about 500. The chief occupation is fishing, which is carried on extensively.

A public wharf was constructed in 1905 at Miscou harbour, the general landing place for the island.

On July 12, 1910, a contract for an extension was entered into with Mr. E. R. Reid.

Work began on June 9, 1911, and by November 24, when it closed down for the winter, the first twelve blocks had been built 14 tiers high, *i.e.,* up to the level of the stringers. The stringers were laid over eight blocks and nine spans, and the covering to the end of the fourth block. Blocks 13 to 20 had been built 12 tiers high, block 21 and the pierhead 10 tiers high, and all filled with ballast.

The expenditure for the fiscal year 1911-12 was $12,400.

MISPEC.

In a long narrow cove at Mispec, 8 miles east of St. John, the Department has built two piers for the protection of barges engaged in carrying supplies to, and pulp from, a mill built at the head of the cove. The pier on the west side, 198 feet wide on top, stands in 23 feet at high water, but is dry at low water.

During 1911-12, repairs were made to the covering, sheathing, braces and fenders of the west pier. Loose sheathing on the sloping face was fastened. One new ladder and three new mooring posts were placed in the work. The gap between the old and new work was closed with timber and filled with stone, and the top bridged with stringers and covering.

Work was begun September 5, 1911, and suspended March 20, 1912.

The expenditure for the fiscal year 1911-12, is $802.85.

MONCTON.

Moncton is the headquarters of the Intercolonial Railway and the terminus of the Grand Trunk Pacific and Moncton & Buctouche railways. The population is 11,333. The town lies at the head of navigation on the Petitcodiac river.

An extension 162 feet long of the Old Public wharf, so-called, was built in 1909-10. The old wharf itself was transferred to the Department on March 28, 1911, and during 1911-12 work was in progress by day labour between August 22 and December 30 on: (1st:) the construction of a bed for scows at the lower end of the wharf, formed of crib-work about 27 feet wide by 14 feet long on the outside, and an excavation in the mud bank on the inside; and (2nd) the reconstruction and repair of the old section of the public wharf, 90 feet wide on the outer face and extending shorewards 75 feet. New crib-work with plank covering was carried in about 46 feet, and the remainder, about 30 feet wide, was filled with ballast, earth, cinders, &c. The outer face was rebuilt with square hemlock timber to a depth of 9 to 18½ feet below the top, outside which 16 hardwood fender piles were driven, and the spaces between the fenders, both at front and side, were sheathed with 4-inch plank.

At the end of the fiscal year 1911-12, the cap timbers and a small part of the sheathing, covering and ballast remained to be placed, and some bolting and trimming of the timbers were required.

The expenditure for the fiscal year 1911-12, was $3,574.39.

NEGUAC.

Neguac lies at the northern end of Miramichi bay about 27 miles from Chatham.

The wharf, built by the Department in 1892 and 1894, is the terminal point for trips of the daily river steamer and freight is landed here for the districts of Neguac, Tabusintac, &c.

To provide more accommodation for freight and to give slightly better water, an addition to the pierhead is proposed. Tenders were asked for the construction of the extension during 1911-12, but as those received were much above the estimated cost it was decided to build it by day labour. Materials were procured, but nothing was done during the fiscal year.

NEW MILLS.

New Mills, Restigouche county, is a settlement on the south shore of the Baie des Chaleurs about 13 miles east of Dalhousie.

On January 18, 1911, a contract was entered into with Mr. Warren Taylor for the construction of a wharf at the mouth of the Benjamin river about 1 mile east of New Mills station.

Work was begun on February 28 and by March 31, 1911, the pier-head and nine blocks were partially built.

The wharf was completed on August 10; it is 798 feet long on the centre line and consists of a shore block 37·2 feet, a span 12·8 feet and a block 11·3 feet long; 17 blocks and 18 spans about 20 feet long, except two spans which were lengthened to about 25 feet to allow the passage of scows, and a pier-head 30·5 feet long by 30·2 feet wide. The width of the approach is 19·7 to 20·8 feet. The whole is built of round timber crib-work sheathed, except at the shore end, with 4-inch hardwood.

The expenditure for the fiscal year, 1911-12, was $8,795.60.

NORTHWEST MIRAMICHI (LAWLOR'S SHORE.)

There are large lumber operations on the Northwest Miramichi river proper, about 1 mile above Newcastle. The settlements on the 'Northwest' are dependent on the river steamer for freight and passenger service.

Dredging has been in progress on the Northwest Miramichi in the years 1904-5-6-7-10 and 11.

Between June 27 and August 12, 1911, under an agreement with Mr. Peter England, the dredge *Excavator* worked on the shoal at Lawlor's shore, 13 miles above Newcastle, in making a cut 50 to 100 feet wide and about 1,200 feet long with a depth of 5 to 7 feet at low water spring tides; the range of spring tides being 7 feet. The least depth at the beginning of the season was about 3·2 feet.

The material removed amounted to 7,358 cubic yards which includes 20 cubic yards, the equivalent of the removal of logs, etc.

The expenditure for the fiscal year, 1911-12, was $2,580.84.

Dredging at Sinclair's Wharf.

Sinclair's wharf, 3 miles above Newcastle, is the limit of deep-water navigation on the Miramichi river. About 10,000,000 to 15,000,000 feet B.M. of lumber are shipped from the wharf annually to over-sea ports.

Previous to the dredging, the depth close to the face of the wharf was about 12 to 14 feet, which was increased to about 16 feet. Under the vessels' keels, the depth was about 15 to 19 feet which was increased to 20 to 22 feet. The range of spring tides is 6 feet. The dredging enables vessels to moor close to the wharf and to lie afloat as required by the charters.

The work was done under an agreement with Mr. Peter England by the dredge *Excavator* between August 18 and October 25, 1911, in which time 7,009 cubic yards of sand, mud, etc., were removed, including 20·4 cubic yards, the equivalent of the removal of about 13 sunken logs.

The berth dredged was 75 feet wide for the upper 265 feet of its length, increasing to 120 feet wide opposite the lower end of the wharf. The length next the wharf was 366 feet; the length outside, including the approaches, about 520 feet.

The expenditure for the fiscal year, 1911-12, was $3,197.55.

OAK POINT.

Oak Point, Northumberland county, is a settlement on the north shore of the Miramichi about 14 miles below Chatham, and a point of call for the daily river steamer.

A wharf, 481 feet long, was constructed here in 1907-8.

During 1911-12, $8.55 was expended for slight repairs to the covering of the wharf.

PETIT ROCHER.

Petit Rocher, Gloucester county, a farming and fishing settlement on the Baie des Chaleurs, 12 miles northwest of Bathurst. A breakwater was constructed between 1905 and 1908.

During 1911, a right-of-way to the breakwater was purchased. It is 2,430 feet long by 33 feet wide with, in addition, an area of about three-quarters of an acre at the shore for a landing place, &c.

The expenditure for the fiscal year was $941.60.

POINT DU CHENE.

Point du Chene, Westmoreland county, lies on the south-east side of Shediac harbour. It is a terminus of a branch of the Intercolonial Railway and for the steamer *Empress* running during the season of navigation from Summerside, P.E.I.

During the fiscal year 1911-12, about 500 cubic yards of large and mixed stone were procured and with about 100 cubic yards on hand, placed to form a rough talus along the outside of the inner breakwater. Four tiers of timber were laid on the small block at the inner end of the breakwater to bring it above high water level, and the block was filled with stone. Five piles were driven at the end of the fiscal year, the beginning of a retaining wall to be constructed in the rear of the ballast wharf next the outer breakwater to prevent ballast, sand, &c., from being washed into the dock.

Work was in progress between August 28 and October 21, and between February 7 and March 30.

The expenditure for the fiscal year 1911-12 was $2,916.08.

Dredging.

Between May 29 and June 16, 1911, dredging was in progress at Point du Chene with the dredge *Bruiser,* in continuation of the contract of the preceding season with the General Construction and Dredging Company.

11,058 cubic yards of mud were removed in deepening the berths of the steamer *Empress,* and in the slip at the Intercolonial Railway wharfs. At the*Empress* berth, an area about 300 feet long and 25 feet wide was dredged. The depth reached was about 17 feet at low water.

The expenditure for the fiscal year 1911-12 was $3,032.41.

POINT SAPIN.

Point Sapin, Kent county, is a fishing and farming settlement of about 300 inhabitants on the shore of the Northumberland Straits, about 8 miles south of the entrance to Miramichi bay. The district is about 34 miles by road from the nearest railway, and therefore dependent on water transport, for which there is at present no shelter or wharf accommodation. The value of the fisheries is about $20,000 to $30,000 annually.

On August 17, 1911, a contract was entered into with Mr. Warren Taylor for the construction of a breakwater at Point Sapin. The contract price is $19,620. The work will consist of an approach 375 feet long and 15 to 30 feet wide, and a pierhead 155 feet long and 25 feet wide on top, to be built of cribwork with close-faces of square timber and with a reinforced concrete wave-break along the outside and easterly end of the pierhead. The timber for the breakwater was procured, but no work was done during 1911-12.

On September 13 to September 15, and between September 22 and October 26, work was in progress by day labour in fencing the departmental property at the breakwater, about 20 rods of fencing being required, and grading a roadway about 150 feet long, 20 feet wide at the bottom and 10 feet deep at the outer end, from the highway to the site of the breakwater. The excavation amounted to about 700 cubic yards, of

which about one-third was rock. A board fence 160 feet long was also built along the top of the slope next the highway.

The expenditure for the fiscal year and the total to date was $4,940.16.

POINTE WOLFE.

Point Wolfe is on Chignecto bay, about 3 miles east of the St. John county line. The work, 896 feet long, consists of a protection of brush, piles and stone, to raise the crest of the beach.

During 1911-12, the bank of the channel, in the rear of the beach, was protected with brush and stone. About 80 cubic yards of ballast were placed in the work, and some walings were added. Rocks in the channel were also blasted.

Work was begun October 2, and stopped October 31, 1911.

The expenditure for the fiscal year 1911-12, is $2,151.03.

PORTAGE RIVER.

Portage river, Kent county, is a small stream which enters the Gulf of St. Lawrence about 12 miles south of Miramichi Bay and 4 miles from Point Sapin.

Along the river are extensive lumber lands, but on account of the shallow and winding entrance, it has been almost impossible to get lumber out. It is rafted to Richibucto, 20 miles distant, to be sawn.

The improvement of the river entrance was therefore undertaken and was carried out by day labour between December 18, 1911, and January 23, 1912, when a cut was made 300 feet long, 30 feet wide and 4½ feet in average depth, across a sand beach which had deflected the channel, thus opening up the original entrance.. Breastworks and a dam, with a total length of 1,225 feet, were constructed across the beach and mud flats to close the recent shallow and winding outlet. The breastworks are composed of stakes driven 8 feet apart each way and the dam of stakes driven 4 feet apart each way, the former being filled with layers of brush and sand and the latter with brush and stone. Breastworks, 175 and 200 feet long respectively, were also built of stakes, brush and stone, at either side of the cut to prevent its being filled with sand and shifted southwards as before.

At the conclusion of the work, there were 3½ feet in the cut at ordinary low water or 7 feet at ordinary high water, which depths will probably increase with the spring freshets.

The expenditure for the fiscal year 1911-12 and total to date was $600.29.

REXTON.

Rexton, Kent county, lies on the Richibucto river, 3 miles above Richibucto.

The public wharf built in 1891-92, was 199 feet long by 36 feet wide. It was enlarged by the construction of an end block 53 by 51 feet in 1910. It is approached from the Rexton highway bridge.

During 1911-12, between August 25 and October 18, the outer 50½ feet of the original structure was rebuilt by day labour from about low water level upwards, 9 tiers of new timber being laid, with new 10 by 10-inch stringers, 3-inch flooring and 10 by 10-inch cap.

The expenditure for the fiscal year 1911-12, was $1,122.01.

RICHIBUCTO CAPE.

Richibucto Cape, Kent county, lies 6 miles south-west of the entrance to Richibucto harbour, and 5½ miles north of Chockfish river. The distance from Richibucto

Cape to Prince Edward Island is 14½ miles. The inhabitants of Richibucto Cape, Richibucto Village (2 miles inland), and the neighbourhood, number about 1,000, engaged in farming and fishing.

The construction of a breakwater was begun in 1908.

Between May 8 and 26, June 1 and October 26; November 21 and December 1, 1911, and between March 1 and 30, 1912, work was in progress by day labour at Richibucto Cape on the construction of two cribs for the pierhead of the breakwater, each crib being 64 by 33 feet at the bottom. The width of the breakwater on top will be 25 feet. The cribs were built about 16 tiers high, *i.e.*, to about half tide level and fully ballasted. Slight repairs were also made at the end of the approach built in 1909, and about 410 cubic yards of ballast were quarried and 350 hauled to the breakwater, and about 24 tons of bolts, &c., were procured for the completion of the work. A scow 40 by 15 feet and a storehouse and office, 23 by 15 feet, were built for use in connection with the work.

The expenditure for the fiscal year 1911-12, was $8,076.82.

RICHIBUCTO RIVER, NORTH AND SOUTH BRANCHES.

The Richibucto river enters the Northumberland Straits 2 miles below the town of Richibucto, and about 26 miles south of Miramichi Bay, and 40 miles north of Shediac.

Works intended to protect the beaches at each side of the entrance and to increase, by scour, the depth over the bar outside were begun on the north beach in 1875.

(1) On May 5, 1911, a contract was entered into with Mr. T. P. Charleson for the construction of a 240-foot extension to the breakwater on the Richibucto North Beach. The contract price is $20,995. The work consists of brush mattresses secured with piles and overlaid with a bank of stone 12 feet wide on top and with sides sloping at the rate of 2 to 1.

Work began about June 1 and closed down for the season on October 27, when the lower mattresses had been laid for the whole length; the upper mattresses and the core stone for half the length, and the outer layers or slope for about 15 feet on one side.

(2) On December 11, 1911, a contract was entered into with Mr. T. P. Charleson for the construction of a breakwater and breastwork on the Richibucto South Beach. The contract price is $11,895.

The work will consist of a breastwork 300 feet long composed of small piles with brush and stone filling, and a breakwater 300 feet long, of which the first 250 feet is of pile-work filled with brush and stone, and the outer 50 feet is similar to the breakwater at the North Beach. The contractor was procuring materials during the fiscal year 1911-12, but no work was done.

The expenditure for the fiscal year 1911-12, was $10,045.20.

RICHIBUCTO.

Wharf.

Richibucto, the shiretown of Kent county and the terminus of the Kent Northern Railway, has a population of 612. The wharf at Richibucto was acquired from the municipality in 1908-09.

Between July 25 and August 24, 1911, and between September 5 and October 14, the outer 110 feet of the pierhead, 40 feet wide, was rebuilt by day labour from low water level upwards and filled and surfaced with stone.

On May 26, 1911, a contract was entered into with Mr. T. L. Murray for (1) the construction of a curved crib-work approach to support a railway siding in the angle

between the approach and pierhead of the public wharf; (2) building an extension to the pierhead 200 feet long by 40 feet wide; (3) dredging the foundation for the pierhead and berth in front to 14 feet at low water ordinary spring tides. The contract price was $17,000.

Work began on May 29 and by October 14, when work closed down for the season, the approach was completed except for trimming off the ends of the cross-ties and placing fenders; a crib 104 feet long for the extension to the pierhead had been built 8½ tiers high, and the dredging was about four-fifths completed.

The expenditure for the fiscal year 1911-12 has been $9,226.98.

Harbour Entrance—Dredging.

Dredging was in progress under contract with the W. J. Poupore Co., with the dredge *Prince Ito* across the bar outside the entrance to Richibucto harbour, between September 12 and October 31, 1911. The dredge only worked eleven days of that time on account of the lateness of the season and the stormy weather encountered.

The depth in the channel over the bar was, last season, 10 to 14 feet at low water ordinary spring tides, while 15 feet at low water or 19 feet at high water ordinary spring tides is asked for. 12,214 cubic yards were removed from the outer part of the channel. The cut will have a total length of 3,600 and width of 200 feet.

The expenditure for the fiscal year was $3,413.87.

RIVER ST. JOHN AND TRIBUTARIES, TIDAL.

BRUNDAGE'S POINT, WESTFIELD (Kings County).

A high water wharf was commenced at this place on September 18 last, and on the 27th of the same month instructions were received to discontinue work for the present. During this period, September 18 to 27, about 4,000 feet of lumber and 1,000 pounds of iron were procured which are still on the site of the work.

The expenditure for material and labour amounted to $150.49, with $70 for the right-of-way, making a total expenditure for the fiscal year ending March 31, 1912, of $220.49.

BURTON COURT HOUSE (Sunbury County).

The dredge *Tanta Wanta,* of the Imperial Dredging and Construction Company, removed the remains of an old boom pier, situated a short distance from the wharf and which was very dangerous to navigation. Work was commenced on August 14 and completed on the 16th of the same month.

The total expenditure for the fiscal year ending March 31, 1912, amounted to $225.

An additional block of crib-work, 41 feet 1 inch long by 11 feet 10 inches wide, with an average depth of 16 feet, was attached to the down stream side of the low water wharf at this place. A gore of crib-work, connecting the pier-head with the approach for a distance of 30 feet 8 inches from the pier-head, was also constructed to facilitate the movement of teams. The original ice-guard on the lower corner of the old work was removed to the lower corner of the completed crib-work. In addition to the extension to the wharf, the roadway was repaired, the spring freshet having carried part of it away. Work was commenced on June 1 and completed on September 30.

The total expenditure for the fiscal year ending March 31, 1912, amounted to $1,395.77.



Seaward face of Negropoint Breakwater at low tide, St. John, N.B., September 30, 1912.



Negropoint Breakwater and Partridge Island from Port Dufferin, St. John, N.B., October 30, 1912.

HAMPTON (Kings County).

The dredge *New Brunswick* commenced work at this place on May 1 and completed the same on May 15, after having removed 5,385·6 cubic yards, scow measurement, of mud and sand. The basin at this wharf was dredged to 9 feet below low water.

HATFIELDS POINT (Kings County).

The dredge *New Brunswick* commenced work at this place on May 27 and completed the same on July 10. 13,151·4 cubic yards, scow measurement, of mud were removed. This dredging was for the purpose of removing a slight shoaling on either side of the wharf to a depth of 9 feet below low water.

HATFIELDS MILL (Kings County).

A short distance below Hatfields Point, at Hatfields Mill wharf, the dredge *New Brunswick* removed 7,009 cubic yards, scow measurement, of mud in order to obtain a depth of 9 feet below low water. This work was commenced on June 14 and completed on July 13.

IRON BOUND COVE (Queens County).

During the spring and summer, of 1910, the wharf at this place settled, throwing it out considerably and leaving the floor surface in a very warped condition; three feet were added to the wharf at the face and one foot at the rear to bring it level. A frame warehouse, 20 feet 2 inches long and 10 feet wide, with pitch roof shingled and battened sides, was constructed near the site. This warehouse is divided into two parts, one for a waiting room and the other for freight. Work was commenced on June 23, and completed on August 17.

The total expenditure for the fiscal year ending March 31, 1912, amounted to $271.

KENNEBECASIS RIVER, between Mathers and Long Islands (Kings County).

The dredge *New Brunswick* cleaned up the channel between Mathers and Long Islands to a depth of 5 feet below low water. Dredging was commenced on May 17, and completed on May 25; 2,904 cubic yards, scow measurement of stone and clay having been removed.

KINGSTON CREEK (Kings County).

This dredging is for the purpose of making a channel 5,480 feet long and 75 feet wide in order to give the people in that vicinity steamboat connections. The dredge *New Brunswick* commenced on August 8, but had to suspend work on the 21st of the same month as the dredge was ordered to St. Stephen. During the period worked, 8,471 cubic yards scow measurement, of mud were removed.

MAUGERVILLE (Sunbury County).

The basin at the face of this wharf was enlarged and cleaned up to a depth of 11 feet below low water in order to properly manipulate the steamers. Dredging was commenced by the dredge *Tanta Wanta* of the Imperial Dredging and Construction Company on August 16, and completed on the 21st of the same month. 1,482 cubic yards, scow measurement, of silt and sand were removed.

The total expenditure for the fiscal year ending March 31, 1912, amounted to $518.70.

MARBLE COVE (St. John County).

The dredge *New Brunswick* removed 3,766·4 cubic yards, scow measurement, of clay during the period April 17 to 27, inclusive.

On March 25, 1912, the dredge *Beacon Bar* of the Maritime Dredging & Construction Company, commenced work at this place, and up to the close of the fiscal year, March 31, removed 5,595·7 cubic yards, scow measurement, of clay, at a total expenditure of $1,678.71. A depth of 7 feet below low water is required.

NEWCASTLE (Queens County).

An additional block of cribwork, 21 feet 3 inches wide by 40 feet 10 inches long, with an average depth of 16½ feet, was attached to the lower side of the high water wharf at this place; a gore of cribwork, connecting the pierhead with the approach for a distance of 21 feet 2 inches from the pierhead, was also constructed to facilitate the movement of teams. Work was commenced on August 15, and completed on October 4.

The total expenditure for the fiscal year ending March 31, 1912, amounted to $793.52.

OX ISLAND BAR (Sunbury County).

A channel, 10 feet deep and 75 feet wide, is to be made at this place for rafts which are towed down the river, the steamer channel being too narrow for them to pass through. This dredging was under contract with the Maritime Dredging and Construction Company and was performed by the dredge *Tanta Wanta*, of the Imperial Dredging and Construction Company, which commenced work on November 2 and suspended on the 6 of the same month, the dredge having broken down and it was too late in the season to commence work again when the repairs had been made. 682.7 cubic yards, place measurement, of clay were removed during the period worked.

The total expenditure, including inspection, for the fiscal year ending March 31, 1912, amounted to $194.26.

Provincial Government wharfs.

The following low water wharfs were built by the Provincial Government:—

Place.	Half cost.
Upper Maugerville	$ 997 50
Hampstead	1,565 69
Clifton	1,486 25
Wilmot	887 25
Maugerville	834 75
Brown's Flats (extras)	187 48

All these wharfs examined and found satisfactory, half the cost of which was paid by the Federal Government, making a total expenditure of $5,958.92 for the fiscal year ending March 31, 1912.

RAFT CHANNEL (Queens County).

A channel is to be made, at this place, 75 feet wide and 11 feet deep for the use of tow and wood boats. This dredging was under contract with the Maritime Dredg-

ing and Construction Company and was performed by the Dredge *Tanta Wanta* of the Imperial Dredging and Construction Company, which commenced work on August 24 and suspended on October 31. 27,292.8 cubic yards, in place, of sand and mud were removed.

The total expenditure for the fiscal year ending March 31, 1912, including inspection, amounted to $6,860.74.

SPOON ISLAND (Queens County).

The dredge *New Brunswick* commenced work at this place on July 15 and completed the same on August 5. 11,911 cubic yards, scow measurement, of mud and gravel were removed. This dredging was for the purpose of making a channel to the wharf, 602 feet long, 40 feet wide and 8 feet deep.

SCOTCHTOWN (Queens County).

This dredging was for the purpose of cleaning up the basin and entrance to the wharf to a depth of 9 feet. Work was commenced by the dredge *Keta,* of J. S. Gregory, on August 25 and completed on November 2. 15,303 cubic yards, in place, of clay were removed.

The total expenditure, including inspection, for the fiscal year ending March 31, 1912, amounted to $3,773.21.

Wharf.

One hundred and twenty cubic yards of stone ballast were placed in the wharf and a portion of the floor relaid; the total expenditure for the fiscal year ending March 31, 1912, amounted to $108.

RIVER ST. JOHN AND TRIBUTARIES, UPPER.

BAKER LAKE (Madawaska County).

A wharf was constructed at this place 80 feet long, 12 feet wide and from 4 to 8 feet high. Work was commenced on July 6, and completed on the 11th of the same month.

The total expenditure amounted to $154.96.

BAKER BROOK (Madawaska County).

A breakwater was constructed at Martins, 93 feet long, 6 feet wide, 5 feet high, and well loaded with rocks. Work was commenced on November 20, and completed on the 25th of the same month.

The total expenditure amounted to $46.05.

BAKER BROOK (Madawaska County).

A breakwater was constructed at Michauds, 72 feet long, 12 feet wide, 5 feet high, and well filled with stone. Work was commenced on October 4, and completed on March 23.

The total expenditure amounted to $77.92.

EVERETTS' (Victoria County).

A breakwater was constructed at this place, 188 feet long, 9 feet wide and 7 feet high. Work was commenced on August 14, and completed on the 24th of the same month.

The total expenditure amounted to $212.91.

EDMUNDSTON, LAJOIE'S (Madawaska County).

An addition was made to the breakwater at this place, 100 feet long, from 16 to 20 feet wide and 4 feet high for a distance of 30 feet and 3 feet high the remaining 70 feet. Work was commenced on January 11, and completed on the 18th of the same month.

The total expenditure amounted to $101.53.

FLANDERS, MILES, TOBIQUE RIVER (Victoria County).

A breakwater was constructed at this place, 160 feet long, 20 feet wide, 8 feet high, and well loaded with stone. Work was commenced on March 9, and completed on the 21st of the same month.

The total expenditure amounted to $314.61.

GREEN RIVER, BELOW EMMERSON'S FALLS (Madawaska County).

Five boulders, measuring about 60 cubic yards, were blasted, and 40 boulders removed from the channel of this river with a team. Work was commenced on September 2, and completed on the 9th of the same month.

The total expenditure amounted to $97.81.

IROQUOIS RIVER, GRANDMAISON (Madawaska County).

A breakwater was constructed at this place, 181 feet long, 15 feet wide and 8 feet high, built of birch. Work was commenced on February 26, and completed on March 25.

The total expenditure amounted to $308.03.

IROQUOIS RIVER, BETWEEN MARQUIS AND MICHAUD (Madawaska County).

A breakwater was constructed at this place, 145 feet long, 8 feet wide, 6 feet high, and well filled with rock. Work was commenced on October 2, and completed on January 26.

The total expenditure amounted to $99.37.

IROQUOIS RIVER, above Morneault (Madawaska County).

A breakwater was constructed at this place, 67 feet long, 7 feet wide and 2½ feet high. Work was commenced on September 20 and completed on the 22nd of the same month.

The total expenditure amount to $49.98.

IROQUOIS RIVER (Madawaska County).

A breakwater was constructed at this place, 175 feet long, 6 feet wide and 5½ feet high, filled with rock. Work was commenced on February 23 and completed on March 11.

The total expenditure amounted to $168.81.

INDIAN FERRY TO GRAND FALLS (Victoria County).

The channels on this section of the river were cleared and 4 boulders, measuring 36 cubic yards, were blasted. Work was commenced on August 28 and completed on September 18.

The total expenditure amounted to $99.94.

JENKINS (Victoria County).

A breakwater of spruce lumber was constructed at this place, 57 feet long, 9 feet wide, from 4 to 6 feet high, and about one-third filled with rock. Work was commenced on August 5 and completed on the 12th of the same month.

The total expenditure amounted to $165.77.

LITTLE RIVER (Madawaska County).

The channel of this river was cleared for a distance of about 2 miles, by removing obstructions, blasting boulders and removing rocks with teams. Work was commenced on October 28 and completed on November 11.

The total expenditure amounted to $106.

LEVESQUE, J.B. (Madawaska County).

A breakwater was constructed at this place, 105 feet long, 10 feet wide, 10 feet high and filled with stone. Work was commenced on February 20 and completed on March 19.

The total expenditure amounted to $386.77.

NADEAU, ALEX. (Madawaska County).

A breakwater was constructed at this place, 22 feet long, 12 feet wide, 4 feet high and filled with stone. Work was commenced on March 18 and completed on March 22.

The total expenditure amounted to $40.

ST. FRANCIS RIVER (Madawaska County).

The channel at Cross Lake was widened and cleared for a distance of 50 yards and at Grew Brook for a distance of 30 to 40 feet. Work was commenced on November 20 and completed on the 27th of the same month.

The total expenditure amounted to $49.88.

SISSON BROOK (Victoria County).

A breakwater was constructed at this place, 210 feet long, 10 feet wide and 8 feet high. Boulders were blasted in the channel for a distance of ½ mile. Work was commenced on September 11 and completed on the 27th of the same month.

The total expenditure amounted to $150.25.

SAUNDERS, WM., TOBIQUE RIVER (Victoria County).

A breakwater was constructed at this place 100 feet long, 18 feet wide, 7 feet high and well loaded with stone. Work was commenced on February 26 and completed on March 8.

The total expenditure amounted to $259.86.

TROUT RIVER (Madawaska County).

The channel of this river was cleared for a distance of from 6 to 7 miles; 6 boulders, measuring about 13 cubic yards, were blasted. Work was commenced on September 19 and completed on the 30th of the same month.

The total expenditure amounted to $100.60.

LOWER LINE TO INDIAN FERRY (Victoria County).

At Rapid de Femmes, a boulder, 12 by 16 by 6, and another 7 by 10 by 4½, were removed and rock was blasted about 4 miles above Grand Falls. Work was commenced on August 21 and completed on September 2.

The total expenditure amounted to $100.60.

SURVEY.

FREDERICTON TO HAWKSHAW BRIDGE.

A total expenditure of $315.50 was incurred during this fiscal year, in connection with completion of plans of survey between Fredericton and Hawkshaw made last fiscal year by A. E. Hanson, engineer-in-charge.

ST. ANDREWS.

St. Andrews is a terminus of a branch of the Canadian Pacific Railway, and lies, by water, 50 miles west of St. John. The town is situated at the mouth of the St. Croix, on the point of a peninsula stretching into Passamaquoddy bay, a deep sheltered inlet of the Bay of Fundy. In the summer months, St. Andrews is a favourite watering place, frequented by tourists and yachtsmen, also by fishermen. An extension of the public, or what is known as the market wharf, was built by the Department a few years ago. The extension consisted of a pile approach 468 feet long, and a pier-head of square crib-work, 36 by 70 feet. A pontoon, with a movable gangway, was afterwards added as a floating landing stage. There is a depth of 34 feet at high water at the end of the pier-head. The work done in 1911-12, consists in widening the outer end of the approach on the west side for a distance of 50 feet and a breadth of 20 feet. The extension is built on 24 bearing piles, set on mud sills, which are sunk in the gravel and ballasted. The extension makes room around the slip, and will give space for a freight-shed. A new ladder was placed on the pier-head; new axle and wheels were fitted to the gangway of the pontoon, and the hand-railing was extended 21 feet. A new counterpoise was placed in position on the wharf. A new pile driver was purchased and four hundred and eight piles were procured for next season's work.

Work was begun September 4, and suspended December 15, 1911. The expenditure for the fiscal year 1911-12, is $36,404.17, in which the cost of dredging is $34,557.21.

Dredging.

The dredging authorized in 1911-12, was the completion of the east channel, 150 feet wide to 12 feet at low water, and the completion of the approach to the departmental wharf to 10 feet at low water. Addditional dredging was authorized, comprising the widening of the basin between the public wharf, nearly to the Canadian Pacific Railway upper wharf, to a depth of 10 feet below low water or to rock. A part of this was done.

	Cubic yards.
Authorized quantity	110,000
Additional authorized quantity	163,000
Total authorized	273,000
Total quantity removed, inspector's returns	136,789
Estimated quantity yet to be done	204,000

Material: gravel, clay, mud and sand.
Work began May 27, 1911; suspended September 25, 1911.
Contractors, Dominion Dredging Co., Ltd., of Ottawa.
Dredge, *Delver*.

ST. JOHN HARBOUR.

During 1911-12, the dredge *Fielding* continued deepening and straightening the main channel of the entrance to St. John harbour to a depth of 30 feet at low water. The length of the channel is 6,000 feet, and the general width is about 650 feet.

Quantity excavated, captain's returns, 384,179 cubic yards.
Material: sand, mud, gravel, stones, clay and boulders.
Work resumed April 2, 1911; suspended December 27, 1911.

During 1911-12, the stone-lifter assisted in the work of deepening and straightening the main channel of St. John harbour by removing 249 boulders, aggregating 475 cubic yards. The largest of these boulders were 39, 59, 77 and 92 tons weight.

The stone-lifter began work on July 4, 1911, and was laid up on February 6, 1912.

BEACON BAR.

A depth of 36 feet below low water is required over the crib seats at this place, 35 feet over the berth area and 32 feet over the remaining area. The dredges *Cynthia, Iroquois, Beacon Bar* and *Beaver* have been working off and on at the Beacon Bar dredging, which commenced this fiscal year on April 4.

During the fiscal year ending March 31, 1912, 1,429,256·2 cubic yards of Class 2 were removed, making a total expenditure, including inspection, of $573,853.25.

On March 26, 1912, the Maritime Dredging & Construction Company commenced depositing material behind the retaining wall on the Beacon Bar and up to the end of the fiscal year deposited 3,235·9 cubic yards at a total expenditure of $101.80.

RODNEY SLIP, SAND POINT.

The dredge *Cynthia* of the Maritime Dredging & Construction Company commenced work at this place on November 14, and completed the same on November 16, after having removed 4,297·5 cubic yards, scow measurement of ordinary spoil. The entrance to No. 7 berth was cleaned up to a depth of 32 feet below low water for a width of 315 feet and gradually diminishing to a width of 70 feet. A depth of 22 feet below water was made for a distance of 370 feet beyond the bend in the wharf, and for a width of 45 feet.

The total expenditure for the fiscal year ending March 31, 1912, amounted to $1,697.51.

SAND POINT (BERTHS Nos 2, 3 AND 4).

The dredge *Cynthia* commenced work at this place on November 10, and completed the same on November 18, after having removed 9,039 cubic yards, scow measurement, of ordinary spoil. This dredging was for the purpose of cleaning up berths 2, 3 and 4 to a depth of 30 feet below low water and for a width of 60 feet.

SAND POINT (WAREHOUSE NO. 7).

(Installation Heating System).

The work of installing the heating system in No. 7 Warehouse was commenced by Contractor Fred Barr on March 3, 1911. The four offices, gear room and two

workshops are heated by a low pressure return system of steam heating. A Gurney boiler, capable of 800 square feet of heating surface, is provided. In each office, there is installed one radiator, and in the gear room, a box coil for heating and drying the gear. The system is well provided with expansion joints and check valves. Steam mains are covered with asbestos and the returns are protected with double boxing. Work was completed on June 3.

(Construction of Boiler House).

A concrete boiler house, 11 feet 5 inches by 21 feet 5 inches by 11 feet, with reinforced concrete roof, houses the boiler. Work was commenced by J. W. Long & Son in March, 1911, and completed on June 30.

SAND POINT (Warehouses Nos. 6 and 7).

(Installation lighting system).—The work of installing lights in these warehouses was commenced on April 11 by the Vaughan Electric Company and completed on May 16.

(Installation of fire protection and water supply).—The work of installing the fire protection and water supply was commenced by Fred H. Barr on June 3 and completed on October 31 last. 1,050 feet of 2½ inch hose have been placed and connected in the warehouses, with seven brass hose nozzles and five invincible nozzles.

FORT DUFFERIN.

This is a breastwork on the west side of the entrance to St. John Harbour, 962 feet long, from 7 to 14 feet wide on top, and about 9 feet in mean height. The work is intended to protect the headland upon which Fort Dufferin is built.

During 1911-12, for a distance of 305 feet the decayed cap timber and bolts were removed and replaced with new material, 115 close-piles were driven; the old piling was renewed for a length of 59 feet, and a length of 50 feet of the break, 4 tiers in height, was rebuilt. Twenty-five cubic yards of ballast were placed in the work.

Work was begun, 8 February, and suspended, 30 March, 1912.

The expenditure for the fiscal year 1911-12, is $4,165.25.

MARSH BRIDGE.

During 1911-12, the repairs to the dam of the Marsh Bridge aboideau and the construction of new flood gates were completed. The Department contributed one-third ($8,298.30) of the total cost, the remaining two-thirds being paid respectively by the Corporation of St. John, and the Provincial Government.

NEGROPOINT BREAKWATER.

Negropoint is a breakwater (originally built with a cribwork core, but now a rubble mound) 2,200 feet in length, closing a part of the west channel of St. John Harbour. Although the stones were large, they were easily dislodged by the sea, and for some years heavy concrete blocks have been made in place, on the top of the mound.

During 1911-12, nine blocks of concrete, aggregating 567.7 cubic yards, were made in place. 2,500 barrels of sand; 1,019 cubic yards of granite; 2,390 barrels of cement, and a new concrete mixer were procured. About 900 cubic yards of granite were broken and crushed to the size required for making concrete. Repairs were

made to the concrete at the base of the lighthouse, which was damaged by a heavy storm on the 22nd of February. The sheds, warehouses and scows were also repaired.

Work was begun, 17 August, 1911, and suspended, 30 March, 1912.

The expenditure for the fiscal year 1911-12, is $19,404.87.

PARTRIDGE ISLAND.

Partridge island is the quarantine and lighthouse station at the entrance of St. John harbour.

In 1911-12, new steps were built between the west pier and the new quarantine wharf at Partridge island. The work consisted in the removal of the old stairs and building, and replacing by a flight of 23 steps, 23 feet long and 4 feet wide, with a hand-railing on each side.

The materials were furnished and the work was performed in November, 1911, by Mr. Harry P. Williams, by agreement, for the sum of $120.

Waterworks.

In 1911-12, the whole of the water-pipe which lies above ground, laid across the west channel of St. John harbour, from Fort Dufferin to Partridge island, was examined by a diver, as the quarantine officer reported there was no pressure on the island. It was especially important to have water at the quarantine station during immigration season. After making repairs to an extensive leak, the diver reported that, in the whole of the pipe examined, there was no other leak to be found, and the quarantine officer stated that the pressure was never better.

Work was begun November 25, and completed December 9, 1911.

The expenditure for the fiscal year, 1911-12, is $722.81.

The total expenditure for all works, including dredging, in St. John harbour, for fiscal year 1911-12, is $697,965.84.

ST. LOUIS.

The St. Louis or Kouchibouguacis river enters the Gulf of St. Lawrence 7 miles north of Richibucto. The river is well settled on both banks, the inhabitants numbering 2,000.

Large quantities of mussel mud are dredged on the river and scowed to the farms, and as shoaling has occurred on the upper 2½ miles of what was formerly the navigable section, preventing the passage of scows and lessening the fishing in the river, dredging has been in progress during the past three seasons to make a channel about 40 feet wide and training walls have been constructed to confine the current to the new cut.

Between September 5 and 23 and October 2 and 18, 1911, the breastworks or training wall were extended 60 feet, and 115 cubic yards of brush and 263 cubic yards of ballast placed in them. 366 cubic yards of sand, etc., were removed by dredging in a length of about 700 feet to widen a cut made last year, and the greater part of the dredged material was placed in the breastworks.

In the three seasons, the work has extended over a length of 8,100 feet of channel.

The expenditure for the fiscal year 1911-12 was $416.67.

ST. STEPHEN.

St. Stephen, 82 miles west of St. John by rail, is situated on the St. Croix river opposite the town of Calais, in Maine, U.S. Spring tides rise 23 feet.

Dredging was asked, to allow vessels to reach the new pile wharf, built by the Canadian Pacific Railway. The proposed depth was 19 feet below high water. The original depth in the channel was from 6 to 7 feet at low water.

The dredging done in 1911-12, covered a length of 390 feet and a breadth of 240 feet, but it was incomplete, about one-quarter being done below the required level.

	Cubic yards.
Authorized quantity	25,000
Quantity excavated, inspector's returns	24,926
Quantity excavated beyond limit of 1 foot below authorized depth	6,031

Material: mud.
Work begun, October 12, 1911; ceased, December 13, 1911.
Contractors: Maritime Dredging and Construction Co., St. John, N.B.
Dredge: *Beacon Bar.*
Contract price: Ordinary spoil, 49 cents per cubic yard.

SACKVILLE.

Sackville, Westmoreland county, is a thriving town of 1,380 inhabitants and a station on the Intercolonial Railway at the junction with the N.B. & P.E.I. Railway. It lies on the Tantramar river and near the head of Cumberland Bay.

On April 6, 1911, a contract was entered into with Messrs. O. & W. Downey for the construction of a wharf, consisting of an approach 210 feet long by 20 feet wide and a pierhead or wharf proper 350 feet long by 40 feet wide, also a bed for vessels 400 by 50 feet along the outer face of the wharf and one for schooners, scows, &c., 200 by 30 feet along the inner face.

Work commenced on May 10 and by November 9, when it closed down for the season, the shore block 150 feet long had been built up ready for the covering, the small block, 20 by 20 feet of the approach, to about two-thirds the finished height, and the main wharf to a height of 29 tiers or 24 feet for the full length on the outer face, with an additional three tiers for a length of 330 feet and one tier for 80 feet, the two lower ballast floors had been laid complete and the upper for a length of 230 feet.

The expenditure for the fiscal year 1911-12 was $18,199.50.

SEAL COVE.

Seal Cove on the island of Grand Manan, is an exposed inlet at the head of which is an important fishing station. It is situated about 12 miles from North Head. In 1909-10, a breakwater 439 feet long was built at Seal Cove, to give some shelter to the fishing boats at the mouth of Benson Cove.

In heavy storms, as the seas wash over the work to the detriment of vessels lying inside, it is intended to build a break, 256 feet long and 3 tiers high.

During 1911-12, beyond procuring the greater part of the timber for the break, no work was done.

The expenditure for the fiscal year 1911-12, is $191.06.

SHEDIAC.

Shediac, Westmoreland county, a town of 1,442 people, lies on the Northumberland Straits, 20 miles south of Buctouche and 2 miles south-west of Point du Chene. It is a centre for a large farming and fishing district and a popular summer resort.

On June 23, 1910, a contract was entered into with Messrs. John Burns and T. P. Charleson for the construction of a public wharf at Shediac. The contract price is $20,690.

Work began on October 19, 1910, and by the close of the fiscal year 1910-11 the round timber work was completed and the stringers and covering partly laid. A 30 by 30-foot extension to the pierhead was built as an extra under the contract at a cost of $2,700, up to within 7 tiers of the full height.

Construction was continued during 1911-12, up to September 15, when the wharf was completed except the shore block, where a small amount of creosoted sheathing is still required. The total length of the wharf is 1,107·5 feet. It consists of a shore block 20 feet wide by 211 feet long; 20 blocks 20 feet square; 21 spans of 20 feet; 1 block 20 by 30 feet; one span 20 by 30 feet, and a pierhead 81·4 by 30·5 feet placed at right angles to the approach. The wharf is sheathed or close-piled with creosoted sheathing.

The expenditure for the fiscal year 1911-12, was $13,936.38.

Dredging.

The depth at the pierhead of the Shediac public wharf is about 6½ feet at ordinary low water or 10·5 feet at high water ordinary spring tides.

To obtain 12 feet at low water, a 2,900 foot extension would have been necessary. This depth is now being provided at the wharf by dredging.

Under a contract with the General Construction and Dredging Co., dredging was in progress between September 27 and November 18, 1911, in which time 20,693 cubic yards, place measurement, of mud and sand were removed. Beginning 2,860 feet from the north-east corner of the Shediac wharf, two cuts were carried to within 1,380 feet of the wharf with an average total width of 75 feet on the bottom, and a single cut 40 feet wide was carried in 240 feet farther. The general depth reached was 12 feet at low water.

The expenditure for the fiscal year 1911-12 and total to date on the dredging was $7,412.60.

SHIPPIGAN GULLY.

Shippigan Gully, Gloucester county, a passage between Shippigan island and the mainland, much used by fishing and other vessels in passing from Baie des Chaleurs to the Gulf of St. Lawrence, is situated 56 miles off Bathurst, the shire-town of the County of Gloucester, and three miles from Shippigan, the terminus of the Caraquet Railway.

Works were begun in 1875 to improve the channel at the gully in which there was a least depth of only 3¼ feet at low water. The construction of dams and breakwaters, concentrating the current in one channel, increased the depth to nearly 6½ feet in 1898 and to about 6 feet at low water or 13·8 feet at high water spring tides in 1903-04.

During 1911-12, between September 1 and October 10, repairs were in progress on the west breakwater starting at the end of the first 182 feet of the breakwater which was rebuilt in 1910. Forty-four main piles were driven in bents of three piles each, the bents being 10 feet centre to centre and covering a length of 150 feet. For 80 feet of this length, cross ties and four walings were placed and along the outside, 82 close piles were driven. A quantity of square lumber, piles, &c., were obtained for the continuation of the work, hauled to the gully and piled between March 8 and 16.

The expenditure for the fiscal year 1911-12 was $3,062.93.

Dredging.

During 1911-12, a contract was entered into with the W. J. Poupore Co., for the removal of 30,000 cubic yards, place measurement, at Shippegan Gully, to widen a cut across a sharp bend in the channel inside the entrance.

No work was done under the contract in the fiscal year.

SPINNEY'S POINT.

Spinney's Point is on the west bank of L'Etang river, about 6 miles from the mouth, 3 miles below the town of St. George and 1 mile below Mill Cove, but on the opposite bank of the river.

There is an old Provincial Government wharf at this place, 35½ feet long and 30 feet wide. It is proposed to extend this 20 feet and raise it 5 feet, practically a reconstruction of the original work. There would be a depth of 11 feet 8 inches at high water at the end, if this work were done. In 1911-12, no steps were taken towards starting the work, and no expenditure was incurred.

STONEHAVEN.

Stonehaven, Gloucester county, lies on the south shore of the Baie des Chaleurs, 18 miles east of Bathurst.

A breakwater at Stonehaven was acquired by the Department in 1878 and subsequently extended and in 1905-06 a new pier was built on the westerly side of the dock, the whole forming an inclosed harbour about two acres in extent.

Between August 14 and 31, and October 3 and 31, 1911, 151 feet of the inner face of the pierhead was sheathed with 3-inch hardwood planks 20 to 22 feet long. 180 cubic yards of large granite blocks were deposited along the outside of the pierhead and approach. Hardwood planks were placed over the ends of the cross-ties of the westerly pier and on the easterly end of the cribwork outside the north-east corner of the old work. 12 cubic yards of ballast were placed in this cribwork and six pieces of 6-inch hardwood replaced outside it.

The expenditure for the fiscal year 1911-12 was $1,000.31.

TRACADIE.

The Tracadie, Gloucester county, public wharf was constructed by the Department in 1894.

On August 16 and 17, between August 25 and September 6, and between September 28 and October 31, 1911, a quantity of lumber was received and 167 lineal feet of the wharf was repaired by renewing the old decayed stringers, covering and cap. New timbers were laid temporarily over a further 141 feet so that the wharf could be used by teams, slight repairs were made elsewhere on the wharf and the remainder of the new lumber was piled. Towards the close of the fiscal year, lumber to the value of about $600 was procured for the completion of the work.

The expenditure during the fiscal year 1911-12 was $1,864.78.

TRACADIE HARBOUR.

Tracadie is a farming, fishing and lumbering village and settlement on the Gulf of St. Lawrence about 17 miles south of Shippigan Gully and 23 north of Miramichi Bay.

A sand beach about 4 miles long divides Tracadie harbour from the Gulf of St. Lawrence, through which the 'North Gully' is the entrance now used. As the depth on the bar outside the entrance is only 7½ feet at extreme high tides and the channel inside to the wharf is long and crooked, it is proposed to make a new opening through the beach opposite the village where the North Tracadie river formerly entered the sea and where deep water is close to the outside shore. To raise low parts of the beach and prevent the formation of other openings, the construction of breastworks has been in progress since 1908.

Between the 3rd and 26th October, 1911, a foot of brush was added to the breastworks in a length of 2,380 feet, the cross stakes being removed and afterwards replaced to hold the brush. 156 pickets were driven in a single row, 600 feet long, outside the

old breastworks to strengthen the latter and the space between was filled with brush and weighted with sand. 244 pickets were driven and filled between with brush to repair the old breastworks in a length of 300 feet and extend them 160 feet. A quantity of brush and pickets were procured for the continuation of the work.

The expenditure for the fiscal year 1911-12 was $675.16.

TRYNOR'S COVE.

Trynor's Cove is on L'Etang river, 5 miles from Pennfield Station (38 miles west of St. John), on the New Brunswick Southern Railway, and 6 miles from St. George.

In 1911-12, a wharf of round cribwork, 85 feet long, with an approach of stone, 30 feet in length, was built by day labour at Trynor's cove. The pier-head is 33 by 45 feet, standing in 13 feet at high water.

Work was begun July 25, completed, October 4, 1911, and was carried on continuously.

The expenditure for the fiscal year 1911-12, is $2,134.53.

TYNEMOUTH CREEK.

Tynemouth Creek, 21 miles east of St. John, and in the county of that name, is a small haven, dry at low water. Tides rise here about 28 feet. Inside a beach of gravel and stones is a tidal basin, accessible at high water by an opening at the east end of the beach. Piers have been built on both sides for the protection of the entrance. The east pier, of open-faced, square cribwork, consists of an approach 44 feet long and 12 feet wide, with a head 45 by 33 feet. The west pier is of round cribwork, irregular in shape, consisting of beach protection, 226 feet long with a wing 52 by 16 feet, and a block 28 by 34 feet. Both these piers are very old, and demand constant repairs.

During 1911-12, repairs to the west pier were made by building a small block to close the open ends. This block was fully ballasted, covered and sheathed. The old work was besides reballasted, and some new fenders and face-timbers were put in.

Work was begun October 19, 1911, and suspended, March 30, 1912.

The expenditure for the fiscal year 1911-12, is $555.17.

WELCHPOOL.

Welchpool, a fishing village of 600 inhabitants, is situated on Campobello Island, forming part of the County of Charlotte, 50 miles south-west of St. John, in a direct line, and 14 miles south of St. Andrews. Spring tides rise 21½ feet, neaps, 18½ feet. A wharf of round cribwork, 279 feet in total length was built at this place in 1909-10.

During 1911-12, repairs were made to the fenders, and spring piles at the corners of the wharf were replaced.

Work was begun March 20, 1911, and completed December 5, 1911.

Dredging.

The dredging done in 1911-12, consisted in the removal of the remains of an old wharf, in order to give free access to the new wharf and to deepen the water in the neighbourhood for an anchorage for boats. The whole dredging covered a general area of 190 by 260 feet. The bottom was sloped up from 12 feet below low water to 6 feet above low water.

Estimated and authorized quantity, 9,500 cubic yards.
Quantity excavated, inspector's returns, 9,596 cubic yards.
Material: mud, rocks, logs.
Work begun August 21, 1911; completed, October 9, 1911.
Contractors:—Maritime Dredging & Construction Co., St. John, N.B.
Dredge:—*Beacon Bar.*
Contract price,—ordinary spoil, 50 cents per cubic yard.

WILSON'S BEACH.

At Wilson's Beach, a fishing settlement in a small cove on the west side of Campobello island, part of the County of Charlotte, a breakwater, 373 feet in length, was built between 1874 and 1878, by joint contribution of the Federal and Local governments. The work, having become dilapidated, was reconstructed by 1906-07, the new part being 230 feet in length, standing at the head in 13 feet at low water. Spring tides rise 24 feet.

During 1911-12, landing steps were built near the inner end of the wharf, and a galvanized hand-railing was placed.

Work was begun August 21, and completed October 12, 1911, but not continuously.

The expenditure for the fiscal year 1911-12, is $1,674.02 which includes $1,367.12 for dredging.

Dredging.

The work done in 1911-12, consisted in the removal of the remains of an old breakwater, and the dredging beyond the face of the old work, 30 feet to 10 feet below low water, and rising to 2 feet above low water, in order to make more harbour room. The whole dredging covered a general area of 130 by 60 feet.

Estimated and authorized quantity.. .. ..2,500 cubic yards.
Quantity excavated, inspector's returns.. .. ...2,690 " "

Material: mud, rock, logs and gravel.
Work begun, 2 September, 1911; ceased 3 October, 1911.
Contractors,—Maritime Dredging and Construction Co., St. John, N.B.
Dredge,—*Beacon Bar.*
Contract price,—ordinary spoil, 50c. per cubic yard.

WOODLANDS.

Woodlands is situated at the head of Beaver Harbour, about 1½ miles from Beaver Harbour by water, and 4 miles by road. Pennfield station, in Charlotte, on the New Brunswick Southern Railway, is about 4 miles distant.

In 1911-12, there has been built at Woodlands, a pile wharf 200 feet long and 20 feet wide, with a pier-head 60 by 40 feet, standing in 12 feet at high water.

Work was begun, 18 May, and completed, 21 August, 1911, and was carried on, almost continuously.

The expenditure for the fiscal year 1911-12, is $2,293.68.

PROVINCE OF QUEBEC.

AMHERST.

A crib of 100 by 30 by 7 feet has been built to be placed in the south side of the channel that is being dredged.

Expenditure to date, including four schooner loads of timber delivered and materials bought for work, $831.64.

Dredging.

Dredge *No. 4* worked at this place from the 30 of August to 18 November, removing 25,840 cubic yards of boulders, clay, sand and mud, at a cost of 32.13 cents per cubic yard.

ANGERS.

Angers, or L'Ange Gardien, population 1,800, in the County of Labelle, is situated on the Canadian Pacific Railway North Shore line, 13 miles below Ottawa and ¾ mile back from the river.

The stone and earth approach of the wharf having suffered by scouring at the outer end, a platform, 16 feet wide and 8 feet long, was built to bridge the hole (June 17) at a cost of $9.25. An expenditure was incurred in the spring for properly safeguarding new dock from ice which, however, damaged the southwest corner. Minor repairs and improvements, in March, 1912, consisted in replacing one fender and part of the waling; providing a low-level landing and repairing pilework ice-breaker, were carried out by the contractor who built the wharf, Mr. John Murphy, at a cost of $260.

The total expenditure for the fiscal year was $1,033.61.

ANSE À DUFOUR.

Anse à Dufour is a cove situated 3 miles below the village of Ste. Félicité, on the south shore of the St. Lawrence, in the County of Rimouski.

The cove is used as a landing for boats by fishermen.

In the month of September of the last fiscal year, from the 1st to the 15th, the sum of $100.04 was expended towards the removal of rocks to improve the little harbour.

ANSE À LA GROSSE ROCHE (SACRÉ CŒUR.)

L'Anse à la Grosse Roche, in the parish of Sacré Cœur, Saguenay county, is situated on the north side of the River Saguenay, 12 miles from its mouth.

Work done during the fiscal year 1911-12, was the construction of a railing of 130 feet long on each side of the wharf midway between shore and head block, two hundred pieces of timber were bought for pile-driving.

Work started October 2, discontinued November 13.

Total expenditure, including timber purchased, &c., $1,248.99.

ANSE AUX GASCONS.

Anse aux Gascons, in Bonaventure county, is situated on the north shore of Baie des Chaleurs, 7 miles east of Port Daniel.

Anse aux Gascons is considered one of the best fishing stations of the Baie des Chaleurs, a hundred barges or fishing boats being used for that purpose. Their fishing grounds are Miscou and Orphans banks, situated at about 75 miles from the coast.

The wharf built in 1898-99 was extended in 1905, 1906 and 1908. As it stands to-day, this wharf is 420 long by 20 feet wide and 210 feet long by 30 feet wide, forming a total length of 630 feet; 30·6 feet high at outer end, and 16·6 feet of water at low water spring tide.

During the fiscal year 1911-12, a pier, 60 feet in length and 15 feet in width, was commenced to strengthen the angle, and materials were bought to complete the work.

Amount expended, $1,777.27.

ASHUAPMOUCHOUAN RIVER.

Dredging executed during the past fiscal year, in this river was done by the dredge *Lac St. Jean.*

The quantity of material removed was 12,815 cubic yeards from the proposed channel, plus some 3,978 yards for a bed in which to winter the dredging plant as it was impossible to take it down to Roberval, the water being too low.

AYER'S CLIFF.

Ayer's Cliff, Stanstead county, is an incorporated village situated at the southern end of Lake Massawippi. It is a station on the Boston and Maine Railway, 21 miles from Sherbrooke. The population is 400, increasing in the summer to 550, due to its attraction as a summer resort. There are 1 saw mill, 2 feed mills, 2 blacksmiths, 2 general stores, 1 hardware store, 1 temperance hotel, 1 branch bank, 2 churches. The village owns its water supply system, for fire and household uses; electric light and power is supplied from Sherbrooke. It is the headquarters of the Stanstead County Agricultural Society. Two regular free delivery mail routes commence here. It has telephone, telegraph and express connections. The surrounding country is rich agriculturally, and in the territory tributary to this place, which extends about 7 miles in any direction, there is a population of about 700.

At the last session of parliament, the sum of $5,000 was voted for the completion of wharfs on Lake Massawippi; and on May 19, 1911, authority was received to expend this amount by day labour.

Work was commenced on April 1, 1911, and carried on until March 26, 1912, and consisted in raising the level of the stone-filled approach to the wharf to conform to the new level of the public highway; in constructing a low level landing stage 4 feet wide and 18 feet long on the south side of the wharf; in constructing an open shelter 12 feet wide by 16 feet long at the inner edge of the crib head block. The wharf was protected by six 26-foot black ash pile fenders driven along the front face and separated by 10-inch by 10-inch guard fenders spiked to dock. The corners of the wharf were protected by 2 foot by 4 foot by ¼ inch iron plates.

The mooring posts, string pieces and shelter were all given two coats of paint.

In the execution of the above works, 1,613 feet, B.M., of dressed spruce and about 5 cords of broken stone filling were used.

During the fiscal year 1911-1912, the total expenditure was $1,873.08.

AYLMER.

Aylmer, Wright county, is on the Quebec shore of Lake Deschênes, an expansion of the Ottawa river, 9 miles above the city of Ottawa. It is 4 miles from Britannia, the foot of navigation. The town of Aylmer has a population of 3,000 and an additional floating population of some 1,500 in summer.

A contract was entered into with Messrs. Thos. and John Moran, of Arnprior, Ont., for the construction of a wharf at Aylmer, on November 1, 1910. The structure was completed May 4, 1911.

The Department authorized the construction of two ice-breakers, last winter, but owing to the lateness of the season, construction was deferred until this winter. Other improvements consisted in placing two benches in the shelter; a 10 by 10-inch hardwood waling on the three landing faces of the wharf and placing 12 runs in two of the slips.

Total expenditure to March 31, 1912, is $10,462.17, of which $3,844.81 was for dredging.

Dredging.

The departmental dredge *Deschênes* worked at Aylmer, on Lake Deschênes (May 8-20; July 24-November 18), making cuts aggregating 3,474 lineal feet, to width of 25 feet, along the axis of the western entrance channel of the Ritchie and Government wharfs.

12,502 cubic yards sand and clay (scow measure) was removed to a least depth of 9 feet and spoiled in 49 feet of water, ¾ mile out from Ritchie's dock.

BAIE ST. PAUL.

Baie St. Paul is a village, in the county of Charlevoix; population is 1,500, and is situated on the north shore of the River St. Lawrence, 60 miles below Quebec. It is built on both sides of the Rivière du Goufre, which is a tributary of the St. Lawrence, and empties into a large bay, three miles wide. The bay is dry at low tide.

During the present fiscal year, the freight-shed was removed from over the end slip and enlarged in order to provide for the considerable traffic done at this port. The slip at the end of the wharf, being of no use, was covered.

Minor repairs were made to the flooring of the wharf and the buildings on the wharf were painted.

The work was started on August 16, and completed on September 11, 1911.

The expenditure for the present fiscal year 1911-12, is $6,124.63, of which $3,493.10 was for dredging.

Dredging.

The object of the dredging is to permit the Royal Mail steamers, drawing 15 feet of water, to land at the wharf at all stages of the tide.

During the past fiscal year, a small amount of work was done on the east side, and a larger amount on the west side of the wharf; 9,689 yards of material was removed.

A small amount of dredging is still required at the face of the wharf to com plete.

BARACHOIS DE MALBAIE. .

Barachois de Malbaie is a large parish and municipality situated at the head of Malbaie Bay, some 12 miles east of the county town, Percé.

Barachois on account of the large area of rich farming lands situated along four rivers that form the Barachois, on account of the important lumber firms that have built their mills along the Barachois, and on account of its first-class fishing harbour, now that the government has started a training pier to improve the entrance, may be considered the most promising centre in Gaspé peninsula.

Until the government started the training pier, now under construction, the fishing boats could not safely enter or go out of the harbour at falling tide and at low tide on account of shifting sand bars.

They had to remain outside and wait for the rising tide to enter. The work was commenced in 1904.

During the fiscal year 1910-11, the breach in the approach, made by the fall storms of 1909, had to be repaired at a cost of $1,800 by a row of pile-work anchored and supported by pile bents every ten feet. There were 363 piles driven; ballasting that had not been completed on the whole length of the work had to be prosecuted and protected where needed by fascines mattresses.

During the last fiscal year, a crib of 90 by 30 feet has been placed in position, built up to 3 feet above low water level, ballasted and covered over for winter.

Expenditure to date: $1,814.29.

BATISCAN.

Dredging.

Batiscan is situated on the north shore of the River St. Lawrence, 60 miles above Quebec. It is the centre of all the traffic of the surrounding district. The Royal Mail steamers stop there twice daily.

During the past fiscal year, dredging was done in order to allow the mail steamers, drawing 12 feet of water, to land at the wharf at all stages of the tide.

40·171 cubic yards of sand and soft clay were removed and two cuts were made to a depth of 12 feet at low water.

BEAUPORT.

Beauport is a village on the north shore of the River St. Lawrence, in the County of Quebec, some three miles below Quebec.

During the present fiscal year, 2,602,340 lbs. stone-ballast were placed in the wharf.

The work was started on October 3, and completed on November 9, 1911.

The expenditure for the present fiscal year, 1911-12 amounts to $673.25.

BECANCOURT.

Becancourt, a parish and town in Nicolet county, on the Montreal and Southern railway, is situated at the mouth of the Becancourt river, 6 miles from Doucet's landing, on the St. Lawrence river, 7 miles from Three Rivers. It contains 2 grist mills, 2 saw mills, 5 cheese and butter factories, 2 temperance hotels, 13 stores, 1 Roman Catholic church and convent, and has a large trade in lumber, cheese, hay and flour. Population of parish, 1,550.

From August 24 to September 11 last, departmental dredge *No. 3* dredged in east branch of River Becancourt, deepening to the basin to adjoining government wharf built in 1910-11 about ¼ mile upstream of mouth of river.

Some 4,000 cubic yards of sand and clay were removed. Extreme length of basin, 310 feet, with 120 feet average width, depth 3 to 6½ feet. Distance advanced 901 feet. Dumping grounds, one mile out in River St. Lawrence.

The object of this dredging is to provide easier access to public wharf.

BELŒIL.

Belœil, a post village in Verchères county, on the Richelieu river, is 1½ miles from Belœil station. It contains 1 Catholic church, 1 saw mill, 2 hotels, 9 stores, 1 bank (Eastern Townships), and 1 powder mill. Population, 300. The Belœil booms, placed in order to facilitate the passage of boats and barges through the Grand Trunk railway swing bridge over the Richelieu, were repaired during May, July and November, 1911, at a cost of $70.81. The work was done by day labour.

BERGERONNES RIVERS.

Les Bergeronnes rivers, in Saguenay county, is on the north shore of the St. Lawrence river, 18 miles below Tadousac.

The work done, during the fiscal year, was the continuation of the blasting and removing of boulders in both rivers, Les Grandes and Les Petites Bergeronnes, with the view of improving the channel.

Work started June 26 and ended July 20.

BERTHIERVILLE.

Berthierville (Berthier en haut), a thriving river port and incorporated town in Berthier county, is on the north shore of the St. Lawrence, and a station on the Canadian Pacific railway, 58 miles north-east of Montreal, 40 miles from Three Rivers, 18 miles from Joliette. Ferry boat plies between here and Sorel. It contains 2 churches (Roman Catholic and English), 34 stores, 3 hotels, 2 saw mills, branches of the Provincial and Hochelaga banks, 1 water works, 1 convent, 1 college, 1 grammar school, 1 ladies' seminary, 1 printing office, 2 sash and door factories, 2 box factories, 2 foundries, and telegraph and express offices and Melcher's gin distillery. Population, 3,354.

From August 18 to November 23, dredge *Duke of York,* and from August 22 to October 17 dredge *Prince Guy,* both the property of the W. J. Poupore Co., worked in the River St. Lawrence northern channel leading to Berthierville.

The *Duke of York* removed 15,800 cubic yards of sand. Width of cuts, 35 feet; average depth, 1 to 5 feet; distance advanced, 4,263 feet.

The *Prince Guy* removed 58,691 cubic yards of sand and clay. Width of cuts, 26 feet; average depth, 2 to 8 feet; distance advanced, 10,647 feet.

Total quantity removed 74,491 cubic yards at a contract price of 14 cents.

Channel was dredged 100 feet wide and down to 10 feet below zero gauge. Dumping grounds, 3 to 4 miles downstream.

The object of this dredging is to offer easier access to the Berthierville wharfs.

BIC.

Bic, on the south shore of the St. Lawrence, in the County of Rimouski, about 170 miles below Quebec, is a favourite summer resort. Its harbour affords the best natural shelter for vessels of moderate draught. Spring tides rise 17 feet; neaps 9 feet.

The Department of Public Works owns two wharfs at Bic: an old one which is located in the rear of the cove of old Bic harbour, and another at the extremity of the eastern side of the same cove. On November 24, 1910, a contract was entered into for the construction of an addition to the last wharf to be 400 feet in length. At the close of the fiscal year, the work although much advanced, was not yet completed; there remaining three rows of face timbers on a length of 300 feet, the flooring and sheathing of the outer end.

Progress estimates to the amount of $32,069.73 were forwarded for payment, during last fiscal year.

The work was started on May 1 and closed for winter on November 15.

From July 1, to August 1, 1911, the sum of $416.66 was expended in making repairs to the old wharf, which consisted in renewing two platforms of 30 feet span, connecting piers, and repairing the flooring of the wharf. Timber was purchased for the sum of $584.70 in view of future repairs.

Total sum expended during the fiscal year was $30,403.34.

BONAVENTURE ISLAND.

(Petit Bonaventure.)

Bonaventure island, in the county of Bonaventure, is situated on the north shore of Baie des Chaleurs.

It is a fishing settlement between Bonaventure village and Saint-Charles de Caplan.

The breakwater is 188 feet in length by 16 feet in width and 8·5 feet in height.

Materials were bought to an amount of $1,185.80.

BONAVENTURE RIVER.

Bonaventure river, in the Parish of Bonaventure, Bonaventure county, is situated on the north shore of Baie des Chaleurs. It is one of the largest rivers of the baie; the harbour, at its mouth is the most important of the peninsula.

Bonaventure is a good farming district and the main lumbering place of the county. There are valuable limits, several big mills, post and telegraph offices, &c. It is also a very important fishing place.

In October 1910, a contract was awarded to Mr. R. N. Leblanc, of Bonaventure, for the construction of an extension of 650 feet to the training pier situated at the mouth of the river.

The work was completed during the fiscal year 1911-12. The training pier stands to-day, 1,200 feet long by 22 feet wide and 14 feet high at outer end.

Amount of the contract which was paid, $13,900.

During the fiscal year 1910-11, a contract was entered into with Mr. François Lemoine to deepen, dredge out and clean wholly and entirely, to 10 feet at low water spring tide, the channel of the entrace to River Bonaventure, at the price of 24½ cents per cubic yard, scow measurement, or 16⅓ for cast-over.

During the year, the work was completed and a channel of 2,500 feet in length by 160 feet in width was dredged to the required depth.

Material scowed away, dumping ground at about one mile and a half, 65,490½ cubic yards.

Material cast-over, 4,578 cubic yards.

Total amount paid during fiscal year 1911-12, $31,890.48 of which $17,378.20 was for dredging.

BONAVENTURE WEST.

Bonaventure west, in the County of Bonaventure, is situated on the north shore of Baie des Chaleurs, in the Parish of Bonaventure, about 6 miles west of the Village.

During the fiscal year 1911-12, the block built to protect the barges was repaired.

BRYANT'S LANDING.

Bryant's wharf, Brome county, is situated on the west side of Lake Memphramagog, 5½ miles by water and 8 miles by road from Magog, the nearest railway station on the through line of the Canadian Pacific railway. Two steamers making daily round trips between Magog and Newport, Vt., call from May 15 to September 20. During the time that the boats are running, the wharf is used by the population, for a distance of three miles in any direction as a means of transport for passengers and freight of all sorts, up and down the lake.

Since the boats were enabled to call, by the re-construction of the wharf by the government, the population in the vicinity during the summer is increased by about 80 people, who spend an average of a month each at this place.

On June 24, 1911, authority was received to expend the sum of $15, and work was commenced June 23, 1911, and carried on intermittingly until August 26, 1911; and consisted in grading the approach with gravel where the original filling had been eroded or had sunken.

In the execution of the above works, about 10 cords of gravel were used.

CABANO.

The village of Cabano in the County of Temiscouata, is situated on the west shore of Lake Temiscouata, and is an important station of the Temiscouata railway, about 45 miles south of River du Loup.

The firm of Donald Fraser and Sons operates extensive shingle and saw mills at Cabano, and several other smaller firms are operating which makes the lumber traffic very active.

From September 1, to October 1, 1911, the landing pier which was commenced last year, was connected with shore by the construction of a length of some 150 feet of cribwork with high and low level flooring for the different stages of water levels on the lake.

The landing pier is completed with the exception of an 'L' wing on the east side and some digging on the west side of the pier.

The expenditure to carry on that work, was $1,346.04.

This work is to supplement the construction of the wharf built last year on the opposite side of the Lake Temiscouata, at Squateck road, to provide facilities for landing for the Squateck community living about 20 miles east, and which has no other way to reach Cabano, the nearest station on the Temiscouata railway.

In the month of March, 1912, the sum of $1,210 was expended in purchasing timber to be used for further works on the pier, forming a total expenditure for the fiscal year of $2,486.29.

CACOUNA.

Cacouna, one of the best known and most frequented summer resorts in Canada, is situated on the south shore of the St. Lawrence, in the County of Temiscouata, 120 miles below Quebec. Spring tides rise 19 feet; neaps, 12 feet.

During the last fiscal year, between September 1 and October 10, the following repairs were made to the wharf: The flooring and stringers were renewed on a length of nearly 200 feet; the cap timbers were also renewed on both sides through a length of 500 feet, and the spruce sheathing, 4 inches in thickness, was repaired.

The expenditure amounted to $1,134.75.

CANNES DE ROCHES.

Cannes de Roches is a small fishing cove some 5 miles north-west from Percé and 2 miles from Corner of the Beach. All the fishermen from Corner of the Beach and from the Falls of Percé, seek shelter at Cannes de Roches in stormy weather. The breakwater of 175 feet, built in 1907, had to be lengthened 90 feet on account of the number of boats to be sheltered. Built ashore it was launched and secured into position.

Expenditure: $1,428.60.

CAPLAN RIVER.

Caplan river, situated on the north shore of Baie des Chaleurs, is an important fishing settlement in the municipality of St. Charles de Caplan, County of Bonaventure.

The breakwater built on both sides of the entrance of the river is, on east side, 280 feet in length by 8 feet in width; on the west side, from the inside, 125 feet long by 10 feet wide and 60 feet by 15 feet, with an outer block of 60 feet long by 15 feet wide not completed.

During the fiscal year 1911-12, the breakwater was raised 3 feet and, on the west side, was sheathed with 3-inch planks and filled with stone.

The work is not completed but the materials are on the ground.

Amount expended, $850.11.

CAP ST. IGNACE.

The village of Cap St. Ignace, in the County of Montmagny, is situated on the south shore of the St. Lawrence, 46 miles below Quebec.

To accommodate the traffic and to provide facilities for landing, of which the place was entirely deprived, it was decided to build a wharf, and, on December 15, 1908, a contract was entered into for the construction of the work; the contract price being $14,913.

It comprises a structure of open-faced crib-work, 750 feet long, 22 feet wide for a length of 702 feet and 30 feet wide for the remaining 48 feet or head block, together with an approach cut into the bank of the river, 103 feet in length, 22 and 30 feet wide at bottom and top, respectively, with an incline of 1 foot vertical to 10 feet horizontal.

As the beach is very shallow at Cap St. Ignace, there was not a sufficient depth of water at high tide to accommodate the traffic, and it was decided to extend the wharf a length of 500 feet, and during the month of March, 1912, tenders were called for, and at the close of the fiscal year, the contract was not yet awarded.

To improve the approach, the incline, 100 feet long, by 22 feet wide, leading to the wharf, was planked at a cost of $199.96. This work was done during the month of December, 1911. The sum of $60 was also expended during the year to make repairs to the road and fences.

CARLETON.

Carleton, in Bonaventure county, is situated on the north shore of Baie des Chaleurs.

It is an important farming place and a summer resort.

During the fiscal year 1911-12, up to November, part of the flooring was renewed and the cap-piece and mooring-posts were painted.

In March last, the shed was repaired, the wharf ballasted with stone and other repairs were done.

Amount expended for the whole year, $1,680.75.

CHARLEMAGNE.

Charlemagne, a post village in L'Assomption county, is 4 miles from Mascouche, and 12 miles from Montreal, on the Canadian Northern Quebec railway. It has 4 stores, 1 saw-mill, 1 box factory, telegraph and express office, and 2 hotels. Population, 722.

From September 23 to October 1, inclusive, departmental dredge *Nipissing* worked at Charlemagne at the mouth of branch of River L'Assomption, between Ile de la Compagnie and the Charlemagne and Lake Ouareau Lumber Co.'s wharfs. Some 4,836 cubic yards of clay were removed in deepening entrance down to 12 feet below zero gauge. Width of cuts, 25 to 30 feet; average depth, 5 to 10 feet. Distance advanced, 725 feet. Dumping grounds, 1 mile distant.

The object of this dredging was to facilitate access to lumber company's wharfs for the numerous barges, 300 to 400, loading alongside yearly.

CHATEAUGUAY.

Boisbriand is a post settlement in Chateauguay county, on Lake St. Louis, an expansion of the St. Lawrence, and a station on New York Central Railway, with port at Woodland. It has a Roman Catholic church, besides a telephone office. It is an attractive resort in summer for tourists and anglers. Population 200. Work on the contract entered into May 23, 1911, between the Crown and Mr. Eugène Patenaude, of Montreal, for the construction of a landing pier at Boisbriand, was commenced in June following, and satisfactorily completed December 22 last. Contract, price, $7,243.84, called for:—

1. A close-faced crib headblock 60 by 30 feet sunk 13 feet 9 inches in 6 feet of water at low level;

2. A close-faced crib approach, 50 by 18 feet;

3. A stone approach, 233 feet long, including two 18 foot spans, and 18 feet wide at top with sides riprapped and sloped 1 in 1.

A 30-foot right-of-way leads to public road.

The expenditure for the fiscal year 1911-12, is $7,716.19.

CHATEAUGUAY BASIN.

Chateauguay basin, a post village in Chateauguay county, at the mouth of the Chateauguay river, 5 miles from Caughnawaga (Adirondack Junction), on the Canadian Pacific railway, 9 miles from Montreal. It contains Roman Catholic and Presbyterian churches, 2 stores and 1 hotel. The Grey Nun's island is opposite the village. Population about 250.

From October 25 to November 13, departmental dredge *Challenge* worked at Chateauguay basin alongside E. Crepin's wharf. The basin, on a length of 243 feet and a width of 66 feet, was deepened to 8 feet below zero gauge. Material removed, 2,069 cubic yards of blue clay. Width of cuts, 22 to 24 feet; depth, 2 to 6 feet. Distance advanced, 574 feet. Dumping grounds, 3 miles distant.

Object of dredging is to offer easier access to wharf.

CHÂTEAU-RICHER.

Château-Richer is a village situated on the north shore of the River St. Lawrence, 15 miles below Quebec; its population is 1,800.

During the present fiscal year, the five-twelfths of the appropriation not being sufficient to purchase the materials required to complete the extension to the wharf no work could be done excepting some minor repairs to the macadam road. When the complete appropriation was available last winter, the necessary materials were purchased and the work will be executed and completed during the next summer season.

The work was started on the 1st May, 1911, and completed on the 10th of the same month.

The expenditure for the present fiscal year 1911-12, amounts to $2,357.36.

CHICOUTIMI.

The town of Chicoutimi, in the county of the same name, is situated on the south shore of Saguenay river, at the head of navigation, 71 miles above Tadousac, and is the terminus of the Quebec and Lake St. John Railway. The Richelieu and Ontario Navigation Company maintains a daily service between Quebec and Chicoutimi.

During the last fiscal year, the work done was the completion of the earth filling; the extension stands 400 feet in length with a return of 350 feet, there are four slips and thirteen iron bollards.

Expenditure on contract about $1,647. The work was under the immediate supervision of the resident engineer.

Repairs to old wharf.

Some minor repairs were done to the wharf, the blacksmith shop was shifted 40 feet to give passage for railway track to the wharf. The back part was raised about 3 feet in height by 110 feet in length and was filled in to allow the Canadian Northern railway to lay tracks.

Expenditure: $10,245.49, of which $1,427.66 was for dredging.

CHICOUTIMI BASIN.

The Chicoutimi basin, is the mouth of the Chicoutimi river, and is situated about a mile from the Chicoutimi Government wharf, and is the landing place of the Ste. Anne ferry.

An amount of $2,400 was placed in the estimates for the construction of a wharf at the above mentioned place; the construction of the wharf was delayed on account of the site; a certain quantity of timber was purchased.

No work was done.

COMO.

Como, a post village in Vaudreuil county, is situated on the south shore of the Lake of Two Mountains, opposite the Indian Village of Oka, and on the Ottawa branch of the Canadian Pacific railway, 30 miles from Montreal. It is a landing place of the Ottawa river steamers, and has an Episcopal church and a telephone office. Population, 628.

On June 12 and 13 last, departmental dredge *Challenge,* and from July 22 to August 5 departmental dredge *St. Louis* worked at Como making a 4½-foot channel 40 feet wide and 500 feet long opposite road leading to railway station.

Challenge removed 239 cubic yards of clay, advancing 108 feet.

St. Louis removed 3,732 cubic yards of same material, advancing 516 feet.

Total quantity 3,971 cubic yards, the major part of which was cast-over. Remainder scowed ½ mile out in lake of Two Mountains. Width of cuts 25 to 33 feet at bottom, depth 2 to 7 feet.

The object of this dredging was to offer a better landing to motor launch ferries connecting Como with Oka, opposite.

CONTRECOEUR.

Contrecoeur is an incorporated village and station on the Quebec, Montreal & Southern railway, in Vercheres county, Richelieu district, on the St. Lawrence river, 7 miles from St. Denis. It contains 1 Roman Catholic church, 5 stores, 1 hotel, 1 saw mill, 3 cheese and butter factories, 3 shoe factories, telegraph, express and telephone offices, 4 schools, 1 convent, and 1 bank (La Banque Provinciale du Canada). The R. & O. Navigation Co.'s boats call 3 times per week. A fine aqueduct and fire system has been inaugurated. Population of parish, 1,681.

The Contrecœur wharf, the re-construction of which was begun in October, 1910, was completed May 27, 1911, work having been resumed April 1 preceding.

The structure consists of:

1. A close-faced crib headblock 82 feet long (exclusive of ice-breaker 14 feet long), from 32 to 40 feet wide, standing 16½ feet high in 6 feet of water at low level.;

2. A close-faced crib approach 180 feet long and 20 feet wide at top with ice-breaker all along.

The work was done by day labour.

Expenditure during 1911-12, was $4,155.68, of which $1,063.83 was for dredging.

Dredging.

From September 9 to October 21 last, departmental dredge *St. Louis* worked at Contrecoeur immediately in front and along downstream side of government wharf. Some 7,867 cubic yards of clay were removed in deepening to 8 feet below zero gauge. The basin dredged is 181 feet extreme length and 102 feet wide. Width of cuts 30 to 34 feet, depth 1½ to 12 feet. Distance advanced 1,382 feet. Dumping grounds ½ mile distant.

The object of this dredging is to provide easier access to wharf and allow barges to moor along downstream side.

COTEAU DU LAC.

Coteau du Lac or St. Ignace, is a thriving post village in Soulanges county, on the River St. Lawrence, 3 miles from Coteau station, on the Grand Trunk railway, 36½ miles south-west of Montreal. It contains 3 stores, 1 Roman Catholic church, 1 hotel, 1 grist mill and 1 telegraph office. Population, 500.

The Coteau du Lac wharf, built in 1888-89, consists of:

1. A crib headblock 100 by 20 feet 8 inches, with crib extension 39 by 47 feet, outer face sunk 13 feet 5 inches high in 7 feet 5 inches of water at low level;

2. A crib and span approach 73 by 26 feet;

3. A freight-shed of the full width of headblock extension and 20 feet wide with through passageway for vehicles;

4. A cattle yard 40 by 60 feet adjoining public road.

From September 5 to 19, 1911, and from March 2 to 31, 1912, some repairs were made to wharf; part of flooring, stringers and downstream corners of headblock were renewed; the freight-shed painted, and cattle yard fence improved.

Expenditure, $505.61.

The work was done by day labour.

The Crown has another wharf in the same locality, but on the south-east bank of the Soulanges canal.

COTEAU LANDING.

Coteau landing is the chief town of the County of Soulanges, situated on the St. Lawrence river, and on the Grand Trunk railway, 1½ miles from Coteau station, 36 miles from Montreal. It contains 1 Episcopal church, grist mill, 5 stores, 4 hotels, 1 grain elevator, telegraph and express offices, and is the chief grain shipping port of the county. During summer, it has communication with Montreal by steamer. The Soulanges canal connecting Lakes St. Francis and St. Louis starting near the Grand Trunk railway bridge at Coteau, terminating near the junction of the Ottawa and St. Lawrence and passing in front of the town.

The Coteau Landing wharf consists of:—

1st. A close-faced crib headblock 271 feet 8 inches long outside face besides 27 feet icebreaker, 25 feet wide, standing 15 feet 5 inches high in 10 feet of water at low level.

2nd. A close-faced crib approach 92 by 25 feet.

3rd. A crib and span approach 790 feet long, from 12 to 24 feet wide, formed of 26 cribs, timber below and concrete above low water, and supporting steel I-beams and pine flooring.

4th. A freight shed 41 by 20 feet at upstream intersection of headblock and approach.

The rebuilding in concrete of whole headblock begun in October, 1910, was continued from April 25 to May 19, 1911, from September 15 to October 31, and from November 10 to December 11. Encircling reinforced concrete wall 6½ feet high 3 feet thick at base and 1½ feet at top was completed for 317 lineal feet.

Stone was procured as a filling and a foundation for concrete flooring of headblock. Oak fenders were also placed all along outside face of wharf.

The work was done by day labour.

The expenditure for the fiscal year 1911-12, is $2,993.57.

DESJARDINS.

Desjardins village, on Allumettes island, County of Pontiac, is situated on the north shore of the Ottawa river, opposite the town of Pembroke.

The approach and landing head of the public wharf were repaired, October 14-25, at a cost of $376.60. Repairs consisted in covering old flooring with a strip of 2-inch planking in centre of approach, 343 feet long, 10 feet wide, and covering a part of landing head, 30 feet wide, 50 feet long with 3-inch planking.

Expenditure to March 31, 1912, is $376.60.

DODD'S LANDING.

Dodd's landing is located on the Lièvre river, 15 miles above Buckingham.

A landing float was constructed September 25 to October 16, 1911, at Dodd's landing. This float was built of three rows of cedar and is 25 feet wide and 30 feet long, at a cost of $275.35.

DORION.

Dorion or Vaudreuil station is a post village in Vaudreuil county, and a station on the Grand Trunk railway, 24 miles from Montreal. It contains 3 stores and 2 hotels. Population, 300.

From July 8 to 20 inclusive, departmental dredge *St. Louis* worked at Dorion, opposite Hon. N. Parent's property.

Some 2,065 cubic yards of hardpan, boulders and clay were cast over in widening and deepening basin adjoining boathouse to 6 feet below zero gauge. Average width of cut, 21 to 30 feet; depth 6 to 9 feet. Distance advanced, 271 feet.

DORVAL.

Dorval station is a post village in Jasques-Cartier county, and a station on the Grand Trunk railway and Canadian Pacific railway, 10 miles from Montreal. It contains two churches (Episcopal and Roman Catholic) 1 store and 1 hotel. Population, 481.

From October 30 to November 6, departmental dredge *St. Louis* worked at Dorval, opposite the Royal St. Lawrence Yacht club-house. Object being to widen and deepen to 8 feet below zero gauge, harbour immediately downstream or east of the club's wharf.

Some 1,455 cubic yards of sand and clay were taken out. Average width of cut, 31 feet; depth, 3 to 6 feet, and distance advanced, 278 feet. Dumping grounds one mile distant.

FABRE.

Fabre village, population 1,000, County of Pontiac, on the east shore of Lake Timiskaming, 11 miles south of Ville Marie.

The ice-shove, during the spring of 1911, damaged the wharf to a considerable extent. Repairs were as follows: Replacing one pile in the landing-head and 5 piles in the approach; strengthening the southwest corner with 3 extra piles; lengthening all of the fenders, renewing 15 broken braces, and reconstructing the two ice-breakers which lifted from their bases. The wharf was not raised on account of dam at foot Lake Timiskaming not being completed, and wharf would have been too high during the coming season for boat traffic.

Expenditure to March 31, 1912, is $752.15.

FASSETT.

Fassett, population 1,000, in the County of Labelle, on the north side of the Ottawa, located on the Canadian Pacific railway North Shore line, is a centre of lumber industries.

On May 31, 1911, a contract was entered into with Messrs. Thomas & John Moran, of Arnprior, for the construction of a pilework wharf for the bulk sum of $5,955.40.

Work was in progress August 21 to September 19; November 19 to 30; January 3 to February 3; and March 7 to 31, 1912, when work was nearing completion. It was not thought advisable to design the wharf originally for two landings, owing to lack of head room and long approach. During progress of work, it was represented that the accommodation would be too limited unless a low-level landing was provided. By reducing the upper deck and adding to the pilework for a lower deck, joined at outer end of approach by slips, without duplicating approach, the improvement was authorized February 23, 1911, at an extra cost of $1,309.

The structure consists of a two-level landing head, drawing 10 feet of water, 118 feet 6 inches frontage, including ice-breaker, and 48 feet 6 inches deep. The high-level deck being 48 feet long, 15 feet above M.L.W.L., and the low-level deck 48 feet long, 7 feet above M.L.W.L., fully sheeted and fendered. A pilework approach, generally 18 feet wide, 176 feet long with slip 16 feet wide, 44 feet long to lower landing is thoroughly protected with handrails and platform extension 8 by 14 feet into earth fill. A stone and earth approach, 18 feet wide on top, sloping 1 in 1, and 150 feet long. A one-story freight-shed, 12 by 18 feet, is built on the upper deck, partly roofing the low-level shed, 14 by 22 feet, inside pilework.

Expenditure to March 31, 1912, is $7,787.19, of which $155.14 was for dredging.

Dredging.

The departmental dredge *Challenge* worked at Fassett (June 1-6), making two cuts 71 and 81 lineal feet, respectively, to a grade depth of 6 feet around both sides of the landing-pier of the Askwell Lumber Co.'s wharf, to facilitate the loading of barges.

1,764 yards of clay was removed, to a grade depth of 6 feet, and was spoiled in deep water, 14 miles from dock.

FATHER POINT.

Father point, in the County of Rimouski, is on the south shore of the St. Lawrence, 6 miles below the town of Rimouski. Most of the ocean liners call to land or take their pilots. The point is one of the few places on the south shore of the St. Lawrence where deep water can be found at a relatively short distance from shore.

A self-registering tidal gauge was established here some years ago by the Department of Marine and Fisheries. There are powerful compressed air fog horn, an acetylene gas lighthouse and a Marconi wireless telegraph station.

During 1902-3, a deep-water wharf was constructed at Father point.

During a heavy storm in the month of March, 1911, the face-timbers on the east side of the wharf were broken by ice; an opening 10 by 26 feet was made and the stone went out.

During the last fiscal year, between April 1 and July 1, the damages were repaired; two bulkheads were emptied of stone and the face-timbers and hardwood sheathing were replaced. The damage being near low-water line, the repairs were much delayed by wind and tides.

The expenditure for the fiscal year 1911-12, is $1,105.98.

FORT WILLIAM.

Fort William, County of Pontiac, on the Ottawa river, 14 miles west of Pembroke, is the outlet of an important district for agricultural and forest products. The population in the immediate vicinity is placed at 800 inhabitants. It is also a well established summer resort.

At its last session, parliament granted $9,000 towards the construction of a pilework wharf.

A contract was entered into with Ed. Conroy, of Peterborough, Ont., on November 13, and the latter transferred his contract to C. L. McCool, of Fort William, for the sum of $4,990. $600 for extra was authorized March 7 for extension of landing head, to provide better access to wharf in certain winds. Work started on December 7, 1911, and was nearing completion on March 31, 1912.

The structure consists of a pilework landing head having the shape of a trapezoid, 101 feet frontage, depth varying from 56 to 72 feet, pilework approach 18 feet wide, 112 feet long, with platform extension 8 by 14 feet; a stone and earth approach, 18 feet wide on top and 113 feet long, with widening at shore end; a two-line wooden handrailing on both sides of the approach, 225 feet long and a one-storey freight-shed shelter 16 by 26 feet.

Expenditure to March 31, 1912, is $5,070.05.

GARTHBY.

Garthby, Wolfe county, is situated on the east side of Lake Aylmer, at the head of Ward's bay. It is a station on the line of the Quebec Central railway, 47 miles from Sherbrooke. It contains 4 general stores, butcher shop, blacksmith shop, saw mills, church, 1 licensed hotel, and is the distributing center for the lumber trade, which is quite extensive in the vicinity.

At the last session of parliament, the sum of $3,000 was voted for the extension to the wharf; on August 4, 1911, authority was received to expend the sum of $1,200; on December 21, 1911, authority was received to expend the balance of the appropriation; all by day labour.

Work was commenced on September 7, 1911, and carried on intermittingly until February 29, 1912, and consisted in the building of a timber crib head-block 40 feet by 30 feet of open round timber construction below water line and close-faced square timber above water line, fully ballasted with stone; and with a slip 12 feet long, in the centre of the front face, for use during low water season; the crib head-block was connected to the old wharf by a stone filled approach 14 feet wide, on the top, side slopes 1 in 1; is 170 feet long and the outer corners of the crib are protected with iron plates; the top of the head-block is to be planked with 3-inch planking and the surface of the road way to be gravelled after the high water, next spring.

In the execution of the above works, some 2,360 lineal feet of round hemlock logs, 19,435 feet, B.M., of sawn hemlock lumber, 2,898 tons of ballast stone and 2,435 lbs. iron were used.

During the fiscal year 1911-1912, the total expenditure was $3,068.36.

GASPÉ BASIN.

The deep water pier to be built in the outside deep water basin at Adam's bluff, the terminus of the Quebec Atlantic and Western railway, one and one half miles from Gaspé village, had been commenced during the course of the last fiscal year by the Contractor: Horace Dusseault.

The stone approach and the first crib of 140 by 45 feet have been built and the crib ballasted to within 3 feet of coping.

Two hundred and fifty-seven feet have been built and ballasted to within 10 feet of coping and a length of 120 feet built ashore 6 feet high.

The expenditure during the past fiscal year 1912, amounted to $71,041.31.

GEORGEVILLE.

Georgeville, Stanstead county, is an incorporated school municipality on the east side of Lake Memphramagog, 11 miles by road from Magog, the nearest railway

station. The permanent population is 200, increasing to 300 in summer, due to its popularity as a summer resort. There are 5 stores, 1 temperance hotel, 2 churches, post office and telephone. It is connected in winter to Magog and Smith's Mills by stage; in summer, two steamers call twice daily, running between Newport, Vt., and Magog. Along the lake, there are about 50 summer cottages with a population of about 300 for whom Georgeville is the headquarters. The surrounding country is rich agriculturally and for a distance of 5 miles in any direction is tributary to Georgeville. When the steamers run in summer, all freight and passengers for this territory are handled by them.

At the last session of parliament, the sum of $2,000 was voted for repairs and renewals. On June 17, 1911, authority was received to expend $200; on August 4, 1911, authority was received to expend $633.33; on December 21, 1911, authority was received to expend the balance of the $2,000; all by day labour.

Work was commenced on May 18, and completed November, 1911; and consisted in filling in the gravelled surface of the wharf, where it had been eroded by the high water in spring; in continuing the construction of the concrete wall around the outside of the wharf, for a distance of 75·3 feet, and in small repairs to the low water landing stage.

In the execution of the above works, 2,737 feet, B.M., of hemlock and spruce, 220 cubic yards of gravel, 64½ barrels of cement and 538 pounds of iron were used.

During the fiscal year 1911-1912, the total expenditure was $867.89.

GRAHAM.

Graham is a post settlement in Vaudreuil county, and a station (Lavigne) on the C.P.R., 37 miles north-west of Montreal.

The Graham public wharf, built in 1899-1900, consists of:

1. A pile headblock 97 by 32 feet standing 19 feet 9 inches high in 10 feet of water at low level;
2. A pile approach 48 by 24 feet;
3. A stone approach 230 feet long and 24 feet wide at top with hand railing and slopes of 1 in 1 on both sides;
4. A right-of-way 333 by 24 feet leading to King's highway;
5. A freight-shed 25 by 24 feet at downstream intersection of headblock and pile approach and another 15 by 15 feet at south-west angle of wharf.

From September 18 to October 21, 1911, and from March 7 to 30, 1912, extensive repairs were made to wharf; piles at north-east and south-west corner of headblock were strengthened. Some 12 by 12 inch corner pieces, 8-inch front sheathing, 12 by 12-inch caps, 6 by 12-inch stringers and corbels, braces and 3-inch pine flooring renewed and the sheds painted.

The work was done by day labour.

Expenditure, $759.38.

GRAND NORD.

Grand Nord or St. Barthelemi, is a post village in Berthier county, and a station (1½ miles distant) on the C.P.Ry., Montreal and Quebec division, 65 miles east of Montreal. It has 1 Roman Catholic church, 10 stores, 2 hotels, 2 saw and 4 flour mills. Haymaking and the milk trade are well prosecuted here. It has also telegraph and express offices.

Population of parish, 2,325.

From July 24 to August 19 departmental dredge *No. 3* worked at Grand Nord:

1. Deepening to 8 feet, basin adjoining Richelieu & Ontario wharf; some 1,376 cubic yards of clay being taken out.

2. Deepening to 6 feet, creek about ¾ mile downstream of R. & O. wharf; some 1,844 cubic yards of clay and sand being removed, part cast-over, part removed 1½ mile away.

Total quantity dredged 3,220 cubic yards; width of cuts 30 to 35 feet; depth 2½ to 7 feet, and distance advanced 434 feet.

The object of this dredging being to offer easier access to wharf and provide a mooring place for small hay barges.

GRANDE RIVIÈRE.

Grande Rivière, County of Gaspé, is the name of an important fishing center, some 21 miles southwest of Percé.

During the last year, 1910-11, steel concrete blocks to complete sheathing of ten thousand superficial feet were made but could not be secured in place and had to be stored for winter on account of hoisting engine not being delivered in good time. Diver was employed with helper three weeks to remove obstruction and to fill worst places on outside 300 feet with some four hundred bags of cement.

As mentioned in previous reports, the outside face timbers eaten by sea worms, were carried away by the sea, together with most of the stone ballast in the outer section between the lower and upper ballast floors. Spruce sheath-piling were placed alongside but they are being carried away on account of the suction of the water that gathered behind in the section without stone ballast.

Last fall, the outside face pockets have been emptied of stone ballast; the top ballast floor removed, and the lower pockets were cleaned of stone and dirt. The sides of these pockets were lined with deals and heavy canvass to receive the concrete, three pockets on the outside end were filled with concrete up to average low water level.

In November, during the heavy fall gales, the upper structure of the pier was partly destroyed and after having a thorough survey and examination made by a reliable diver it was estimated that the repairs needed, besides the concrete work, would amount to some $10,000. Some temporary repairs at a cost of $684.42 had to be made at once.

Total expenditure for fiscal year 1911-12, $4,410.26.

GRANDE VALLÉE.

Grande Vallée, County of Gaspé, is on the south shore of the River St. Lawrence, 68 miles below Ste. Anne des Monts and about 45 miles by land from Gaspé Basin.

With a view of affording much needed landing and shipping facilities to steamers, schooners and other small vessels calling at this place, together with shelter to fishing boats in stormy weather, it was decided to build a breakwater wharf.

On June 29, 1901, a contract was entered into with Henry and Smith, of Ottawa; for the construction of this wharf near the mouth of Grande Vallée River.

The structure has a length of 900 feet, a width of 25 feet on top at the inner and 29 feet at the outer end, which is in a depth of 14 feet at low water spring tides, built throughout of close-faced timber crib-work, with a batter of 1 in 10 on both sides, filled with stone and sheathed on the weather side with hardwood planks 6 inches thick. The top of the work stands 8 feet above high water spring tides. Spring tides rise 16 feet.

In the fall of 1909, the outside 250 feet were badly damaged, the top structure being carried away and most of the stone ballast thrown inside of the harbour. A diver had to be engaged to remove this stone ballast, during the summer months, at a cost of $2,166. Some $3,000 worth of timber was bought for proposed repairs. On account of not obtaining the necessary plant in good time the repairs could not be proceeded with.

During the last fiscal year, four cribs, one of 100 by 22, one of 35 by 22, and two 32½ by 22, have been partly built to be placed along the outside face of the partly destroyed wharf which had always proved to be too narrow for the traffic of the locality.

Expenditure for the fiscal year, including materials bought, $6,198.53.

GREEN SHOALS.

Green shoals, opposite East Templeton, in the river 6 miles below Ottawa, forms the worst obstruction to navigation in these waters. There are two distinct rock reefs which shoal to within 5 feet of E.L.W.L, and shifting sand bars above and below. A contract has been entered into with the dredging firm of L. Cohen & Son, on the basis of 15,000 cubic yards rock and boulders, and 15,000 yards sand and gravel (scow measure), to be removed from the boat channel. In August 1911, authority was given to increase yardage of rock to 22,700 cubic yards, in order to ease off lower part of the channel, &c.

To keep within the quantities contracted for, a through channel 200 feet wide, 50 feet of which lies to the north of the axis of the proposed ship canal, to bottom grade elevation 117, has been undertaken, across the only real barrier to navigation, opposite the light house. As the sand shoals are not as great an obstruction, the contractors have been directed to do the rock work first.

Work was commenced in 1910 and proceeded with from June 22, to November 17, 1911. To date, 23,877 yards bed rock (scow measure), including some waste excavation below sub-grade, has been removed. During the past winter, a second progress survey was made at this place to obtain closely spaced soundings, as a means of checking the inspection during the past season, for plotting and analysing more closely work performed.

GROSSE-ILE.

Hospital Wharf.

Grosse-Ile is situated in the River St. Lawrence, some 30 miles below Quebec.

During the present fiscal year, the sheathing of the outer corner and of the face of the wharf, which had been cut by the ice, was renewed; some 10 face-timbers were replaced; the work consists of a new rock elm sheathing, 6 inches in thickness, protected by rock elm fenders 12 by 12 square placed 8 feet centre to centre with three rows of carling between.

The work was started September 16, and completed October 31, 1911.

The expenditure for the present fiscal year, 1911-12, amounts to $2,422.89.

HARRINGTON.

Harrington harbour is situated on the Canadian Labrador, it is about 660 miles from Quebec; the village of Harrington has a population of about 50 families, there are two Protestant churches and a hospital. The wharf is situated in front of the hospital and is the continuation of the Deep sea Mission wharf that was bought in 1910.

Of the amount voted for 1911-12, the sum of $387.68 has been expended to purchase timber.

HUDSON.

Hudson, is a post village in Vaudreuil county, on the River Ottawa, and on the C.P.R., (short line), 9 miles from Vaudreuil and 35 miles from Montreal. It is a landing of the Ottawa steamers, and contains 1 Mehodist Church, 1 Roman Catholic church, telegraph, express and telephone offices, 1 hotel and 2 stores. A favorite summer resort for Montrealers. Population, 500.

The public wharf at Hudson, built in 1901-02, consists of:

1. A crib headblock 102 by 19 feet 6 inches standing 18 feet high in 8 feet of water at low level;

2. A stone approach 126 feet long and from 42 to 20 fee wide at top with sides riprapped and sloped 1 in 1, and a guard railing;

3. A storehouse 24 by 18½ feet near upstream intersection of approach and headblock.

From September 8 to 28, 1911, and from March 6 to 30, 1912, repairs were done, consisting in the renewal of part of flooring with 3-inch spruce planks, three storehouse supporting posts and in the painting of storehouse and guard railing. The work was done by day labour.

Expenditure, $598.78.

HULL.

Hull, the shire town of the County of Wright, is situated on the Ottawa river, opposite the city of Ottawa.

During the past season, October 11, minor repairs were made to the freight-shed on the wharf, which consisted in replacing some broken window panes.

Expenditure to March 31, material and labour. $21 00

Dredging.

The departmental dredge *Nipissing* worked at Hull main sewer outlet (October 10-13) upon the request of the Hull city engineer, with the agreement that the city would pay for said dredging, at the rate of $94 per day. One cut 325 feet long, 30 feet wide, to a grade depth of 12 feet was made.

One thousand eight hundred and seventy-two yards (scow measure) sewer deposit and sawdust was removed and spoiled in water ½ mile upstream.

ILE PERROT SOUTH.

Ile Perrot, is a post office in Vaudreuil county, three miles from Ste. Anne de Bellevue, a station on the short line, Montreal and Ottawa division of the Canadian Pacific railway, 21 miles west of Montreal.

The Ile Perrot South wharf, built in 1886-90, consists of:—

1. A crib headblock 118 feet 8 inches by 30 feet with a return 34 by 16 in rear of east end, outside face standing 15 feet high in 8 feet of water at low level; ice-breaker at upstream end.

2. An approach 407 by 24 feet formed of 9 cribs and spans varying from 12 to 25 feet wide; guard railing on both sides.

3. A stone approach 203 by 16 feet with sides riprapped and sloped 1 in 1.

4. A freight-shed 16 by 20 feet at eastern intersection of headblock and approach.

From August 14 to 31, a sum of $250.05 was expended in general repairs to wharf stringers and flooring. The work was done by day labour.

Dredging.

From May 18 to June 9 last, L. Cohen & Son's dredge *Mogul* worked at Ile Perrot west, opposite the Canadian Explosive Company's wharf.

Some 1,110 cubic yards of rock were blasted and removed one-half mile away. Length of cut 178 feet to 10 feet below zero gauge. Width of cuts 18 to 30 feet, average depth 2 to 4 feet. Distance advanced 297 feet. Contract price $4.50 a cubic yard.

Object of dredging was to permit the easier turning of barges, &c., mooring to wharf.

ILE VERTE.

The village of Ile Verte, in the County of Temiscouata, is situated on the south shore of the St. Lawrence, 16 miles below River du Loup and 130 miles east of Quebec.

Spring tides rise, 19 feet; neaps, 12 feet.

During the last fiscal year, a length of 50 feet on the shore end of the wharf was entirely renewed. The flooring, stringers and first row of cross-ties were renewed on a further length so as to make the wharf safe until further repairs are made in the spring.

The work was commenced on the 1st September, and closed on the 26th of the same month. During the month of March, 1912, timber was bought for the sum of $1,343.36, and is now available for further repairs on the wharf.

The total expenditure for this fiscal year was $2,298.85.

KNOWLTON LANDING.

Knowlton landing, Brome county, is situated on the west side of Lake Memphramagog, about 11 miles by water and 15½ miles by road from Magog, the nearest railway station on the through line of the Canadian Pacific railway. It contains 1 general store, 1 summer hotel and several houses. Two steamers making daily round trips between Magog and Newport, Vt., call there from May 15 to September 20. During the time the boats are running, the wharf is used by the population for a distance of from three to ten miles as a means of transport for freight of all kinds and passengers up and down the lake. The wharf consist of a pile head-block 21 feet 10 inches wide and 75 feet long, standing in 9 feet of water, and connected to shore by a stone filled approach about 225 feet long.

On June 24, 1911, authority was received to expend the sum of $25 in effecting necessary repairs.

Work was commenced on June 29, and carried on intermittingly until September 27, 1911. The work done consisted in renewing a portion of the planking of the dock which had become decayed and broken, and in filling the approach to the wharf where it had been washed out by high water.

In the execution of the above works, some 310 feet, B.M., hemlock plank was used.

During the fiscal year 1911-1912, the total expenditure was $25.40.

LACOLLE.

Lacolle, is a post village in St. Johns county, on the Lacolle and Richelieu rivers, and on the Grand Trunk railway, and Napierville Junction railway, 40 miles southeast of Montreal. It contains 3 churches, telephone and telegraph offices, 3 hotels, 7 stores, grist and saw mills, 1 branch bank and 1 foundry. Lacolle is a port of entry. The village is situated in the midst of a rich farming district. Population. 700.

The Lacolle wharf, built before 1890, is situated on the western shore of Ash island dividing the Richelieu river opposite Lacolle. It stands near the eastern end of the Richelieu county highway bridge.

The wharf consists of:—

1. A pile block 101 feet 8 inches by 100 feet standing 30 feet high in 22 feet of water at low level;

2. A freight-shed 40 feet 3 inches by 20 feet 4 inches at upstream middle portion of block adjacent to bridge.

From November 2 to 24, 1911, and from March 9 to 30, 1912, the following repairs, at a cost of $485.68, were made to wharf: North-east corner was strengthened,

two rows of walings 8 by 8-inch oak were placed along north and east faces, some 300 square feet face of flooring renewed and storehouse levelled and painted.

The work was done by day labour.

LAKE ST. JOHN DREDGING.

Ashouapmouchouan River. St. Félicien.

The dredging in the Ashouapmouchouan river was done by the government dredge *Lac St. Jean* assisted by the tug *Marie-Louise.*

The location of the work was at 7 miles from Lake St. John and 1¼ miles from the village of St. Félicien. This dredging is done to improve the channel of the river.

The quantity of dredging done, during the last fiscal year, was 12,815 cubic yards of effective dredging in the proposed channel, and 3,978 cubic yards to dredge a bed and an entrance to it, to winter the dredging plant.

The water was too low in the river to return to Roberval.

The dredging was done from June 12 to November 10, 1912.

LAPRAIRIE.

Laprairie, is a town in Laprairie county, on the south shore of the St. Lawrence, and a station on the G. T. R., it contains 2 churches (Presbyterian and Roman Catholic), 8 stores, 4 hotels, saw and carding mills, 1 brickyard, 1 tomato cannery, 2 agricultural implement factories, 2 butter factories, post office, branch of Banque d'Hochelaga, and telegraph, telephone and express offices. It is a beautiful spot near the Lachine rapids, much frequented in summer. Communication with Montreal is had twice a day by railway and four times a day by steamer. Population, 1,800.

Protection works.

Work on the protective embankment, begun in October 1910, on shore road, from the Laprairie wharf downstream to River St. James, a distance of 3,800 feet, was continued from April 22 to November 27, 1911. The stone riprap was placed on river slope and joints cemented on a length of 1,000 feet. Done by day labour.

During the winter, from 15 Jan. to 7 Feb., large stones were procured for the continuation of this riprap.

The above embankment is 24 feet wide at top with sides sloped 1 in 1.

Wharf.

The reconstruction of the Laprairie wharf, begun in September, 1910, was continued from July 18 to November 22, 1911, resumed December 26 and suspended January 31, 1912. The reinforced concrete wall 8 feet high, 4 feet thick at base and 2⅓ feet at top on a length of 214 feet was completed. The flooring of headblock for 2,100 square feet, was renewed in 4 inch concrete and the approach, 731 feet long and 22 feet at top, raised 2½ feet with stone.

The work was done by day labour.

Expenditure during year was $4,442.78 for both works.

LA SALETTE.

The departmental dredge *No. 2* worked at La Salette (22 May-31 August), making four cuts on the west side of river, aggregating 3,116 feet of cutting, 30 feet wide, to a grade depth of 10 feet. The work in the main west channel consisted in two cuts, 336 feet long, 30 feet wide, and one cut 620 feet long, 30 feet wide. A cut across the river, 435 feet long, 30 feet wide, to a grade depth of 10 feet.

15,223 yards clay (scow measure) was removed and spoiled in water, ½-mile upstream.

L'ASSOMPTION.

L'Assomption is a town in L'Assomption county, 3 miles from L'Epiphanie on the C.P.R., and on the Canadian Northern Quebec Ry. It has 1 R. C. church, 1 convent, 1 model school, 20 stores, 4 hotels, 2 moulding factories, 1 sash and door factory, 1 stove factory, 2 butter factories, 1 foundry, 1 bank (Banque d'Hochelaga), and waterworks besides express, telephone and telegraph offices. Population, 1,700.

Ice-pier.

The L'Assomption ice-pier begun under contract with Mr. Jos. Renaud in February, 1911, was completed October 8 following. It is placed in the middle of River L'Assomption opposite the parish church and consists of:—

1. A substructure of 54 spruce or pine piles driven 18 to 20 feet into the ground and raised to river bed level;

2. A reinforced concrete superstructure 43 feet 8 inches extreme length and 12 feet 8 inches extreme width at bottom, and 25½ feet extreme length and 7 feet extreme width at top, 34 feet high with upstream face nosed 90 degrees and covered with a ¼ inch steel plate 6 by 28 feet.

The expenditure for the fiscal year 1911-12, is $4,547.

Wharf.

On September 19, 1911, the construction of a high and low level wharf was begun at L'Assomption opposite the parish church; structure to consist:

1st. In a close-faced crib substructure, 20 feet wide, from 72 feet long, along front face, to 92 feet in rear, sunk 6 feet high in from 4 to 5 feet of water at low level.

2nd. A reinforced concrete superstructure, the upper portion being 25 feet 1 inch long outside face with upstream side inclined 45 degrees and standing 12 feet above zero gauge with lower portion 45 feet long outside face and standing 7 feet above zero gauge.

When instructions were issued from headquarters on October 18 to stop work, the timber crib substructure was ready to be assembled and sunk in place and a few toises of stone ballast bought.

The work was done by day labour.

Expenditure, $917.02.

LAURIN OR CRABTREE MILLS.

Crabtree Mills, an industrial settlement in Joliette county, on Lac Ouareau, one-eighth of a mile from St. Paul de Joliette station on the Great Northern railway. It has 1 general store, school, and the paper and saw mills of Messrs. E. Crabtree & Sons. Population, between 300 and 400.

The Laurin ice-pier, built under contract with Mr. Jos. Renaud, was started October 6, 1911, and satisfactorily completed November 18 following.

It is wholly of concrete, mixed 1: 3:5, and reinforced with 1-inch square nett, corrugated iron bars. Its dimensions are: 34 feet 3 inches extreme length and 9 feet 2 inches extreme width at bottom, 22 feet by 7 feet at top, 26 feet high with upstream face nosed 90 degrees and sloped 1 in 2, all other faces being inclined 1 in 24. Steel plate, ¼-inch thick, protects upstream angle.

The whole structure rests on rock.

Total expenditure, $3,120.

LES BERGERONNES.

Les Bergeronnes, in Saguenay county, is on the north shore of the St. Lawrence river, 18 miles below Tadousac.

The work done at Les Bergeronnes consists of 30 feet of sheathing, a stone rip-rap between the two cribs and earth filling from wharf to shore.

The space already filled with earth is 72 feet long by 12, 18 and 36 feet in width. and 12 feet high.

Work started September 14 and completed October 11.

Amount expended, $502.08.

LES EBOULEMENTS.

This village is situated on the north shore of the River St. Lawrence, in the County of Charlevoix, 70 miles below Quebec.

During the present fiscal year, no work of consequence could be done in order to repair the west side of the wharf, broken by a steamer in landing, for the reason that the five-twelfths of the appropriation available was not even sufficient to cover half of the cost of purchasing necessary materials, consequently only patchwork was done in order to prevent the ice from entering into the opening. When the complete appropriation was available, all the necessary materials were purchased and the work will be started at the opening of navigation.

The expenditure for the present fiscal year, 1911-12, amounts to $7,215.97, of which $3,077.04 was for dredging.

Dredging.

The dredging executed during the past fiscal years, is to allow steamers, drawing 15 feet of water, to land at the wharf at all stages of the tide.

Work was done by the dredge *Ottawa* around the head block, and 15,951 cubic yards of mud, sand and boulders were removed to the dumping ground half mile away.

LÉVIS.

Lévis is situated on the south shore of the River St. Lawrence, opposite Quebec.

During the present fiscal year, the contract entered into between this department and La Cie Etienne Dussault, on August 8, 1910, for the construction of a deep-water wharf at Lévis, for the sum of $283,064.50, was continued, and up to March 31, 1912, the following work was executed: removing old wharfs, 6,131 cubic yards; filling, 80,732 cubic yards; common excavation, 9,916 cubic yards; shale excavation, 16,247 cubic yards; rock excavation, 6,838 cubic yards; crib-work, stone filling, 29,545 cubic yards; stone filling behind cribs, 2,500 cubic yards; concrete superstructure, 2,902·5 cubic yards; 6 cast-iron bollards; 4 mooring rings.

The last crib is under construction and is nearly completed.

The expenditure for the present fiscal year, 1911-12, amounts to $212,150.02.

LONG RAPIDS.

The departmental dredge *No. 3* worked at Long rapids, at head of navigation for the lower reach on Lièvre river (September 4-November 18), making one cut 1,500 feet long, 25 feet wide, and started a second cut, making 258 lineal feet of dredging, 25 feet wide.

1,522 yards (scow measure) boulders and gravel were removed, and some 6,725 yards cast over were removed and dumped on the east side of river. The dredging in the channel necessitated the blasting of big boulders, which could not otherwise be removed. This work cost $253.50 for labour and $37.22 for explosives, steel, &c. Total $290.72 paid for, over and above regular working expenses of dredge.

LONGUEUIL.

Longueuil is a post town in Chambly county, on the south shore of the St. Lawrence opposite Montreal, on the Shore Line division of the Quebec Southern railway. It contains 2 churches (Episcopal and Roman Catholic), 8 stores, 7 hotels, 1 saw-mill, 1 stove factory, 1 branch bank, and express and telegraph offices. The town has a drainage system, 2 fine squares and good facilities for communication with Montreal by train and ferry. Population, 4,540.

In order to facilitate the operation of ferry service between Montreal and Longueuil, the departmental dredge *Progress,* from November 6 to 25, inclusive, undertook the deepening to 10 feet of channel leading to Richelieu and Ontario wharf. Some 10,782 cubic yards of hard clay and boulders being taken out. Width of cut 50 feet; average depth, 4 feet, and distance advanced, 1,242, feet. Dumping grounds 1½ miles down stream.

LOTBINIÈRE.

The expenditure incurred at Lotbinière wharf, County Lotbinère, during last fiscal year, amounted to $196.75, of which $36 went to pay for replacing fenders, guard-rails, mooring posts, sheds, &c., &c., in early spring on wharf and their removal at close of navigation, last fall.

The balance was spent in replacing 2,600 feet, B.M., of broken or decayed deck-timbers; also, owing to lowering of river level by nearly 2½ feet last season, new landing stairs 18 feet long had to be placed on northeast outer corner of block, and the one on west slope of roadway, had to be removed some 30 feet out to new line of low water, in order to accommodate ferrymen carrying mails and passengers to and from Lachévrotière, Canadian Pacific Railway station, on north side of river.

MAGOG.

Magog, Stanstead county, is situated at the north end of Lake Memphramagog, at the mouth of the Magog river, and on the main line of the Canadian Pacific railway, from Montreal to St.. John, N.B. It is an incorporated town having a population of 3,972 which is steadily increasing. The main industry is the Dominion Textile Company, manufacturing cottons, employing over 2,000 hands, and this plant is at the present time being greatly enlarged. Other industries are two saw-mills, one sash and door factory, and one grist-mill, employing about 100 hands. The town possesses its own water system, volunteer fire-brigade and electric light plant, the latter being a recently completed hydro-electric plant on the Magog river, giving the town power to dispose to other industries. The assessed valuation of the town is $1,235,700, an increase of about 30% in the last year. It is a customs port of entry, the collections in 1910 being $10,555.42, an increase of 40 per cent over 1909. There are three hotels, several stores, weekly newspaper, churches, bank, &c., &c.

The trade over the wharf is extensive. Two steamers make round trips daily between Magog and Newport, Vt., carrying passengers and freight, There are about 500 motor-boats on the lake, all of which call at Magog more or less frequently. The lake is a favourite summer resort, and the accommodation at the different places on the lake is taxed every summer. The permanent residents of the townships of Stanstead, Magog, Bolton and Potton make use of the steamers and launches for passenger traffic, and practically all the freight handled in and out of these townships comes over the wharf, from the Government wharfs at Bryant's, Georgeville, Knowlton Landing and Perkin's Landing, and from several private wharfs.

On June 21, 1911, authority was received to expend $350 in repairing the stone filled approach and the planking of the headblock of the wharf.

Work was commenced on July 5, completed on July 27, 1911, and consisted in the building of the concrete face wall, 2 feet wide and 168 feet long on south or exposed face of the stone filled approach; in renewing 2,077 square feet of the planking of the wharf and in rebuilding 85 feet of the low level landing stage.

In the execution of the above works, some 6,232 f. B.M. of hemlock and spruce, 29 barrels of cement, 213 pounds of iron and 76 cubic yards gravel were used.

During the fiscal year 1911-12, the total expenditure was $425.80.

MARIA.

Maria, on the north shore of Baie des Chaleurs, Bonaventure county, is situated at about 10 miles northeast of Carleton.

It is a prosperous village with a population of nearly 2,500 inhabitants. There is a station of the Quebec and Oriental railway; post and telegraph offices and several stores. All the surroundings are farming lands.

The actual wharf has a total length of 1,342 feet: 1,042 feet long by 20 feet wide and 300 feet long by 30 feet wide. The total height, at outer end, is 19 feet, with 5·1 feet of water at low water spring tide.

During the fiscal year 1911-12, a contract for an extension of 300 feet long by 30 feet wide was awarded to Peter Nadeau & Son. This work, completed in October last, consists in the construction of open cribwork, built with round timber and sheathed on both sides and outer end.

Repairs were also done to the old part of the wharf by renewing the flooring.

Total amount expended, $11,190.99.

MATANE.

The village of Matane, in the County of Rimouski, is situated on the south shore of the St. Lawrence, at the mouth of the River Matane, 235 miles below Quebec.

It contains extensive saw-mills, and important shipments of lumber are made to European markets.

A railway, now in operation, connects this place with Ste. Flavie station on the Intercolonial railway.

The Department of Public Works owns three works at Matane: A landing pier on the west side of the river near the Price Bros.' lumber yard; a breakwater standing on the west side of the mouth of the river and running parallel to it, and another break-water, nearly completed, on the east side of the river and parallel to it.

The breakwater now under contract has a total length of 670 feet; the structure comprises an open-faced construction, built parallel to the river on the east side of its mouth, 500 feet long, 26 feet wide, top measurements, with a batter of 1 in 12, together with an 'L' wing 54 feet in length and a flight of double piles, placd at right angles to the breakwater at its southern extremity. The whole structure to be surrounded with close-pile sheathing, sunk at least 5 feet into the clay. The work was commenced on the first of May, 1911, and closed for winter on November 1; it was carried on by contract entered into on August 29, 1910.

At the close of the fiscal year, the work was not completed: There remaining to be done part of the flooring and pile sheating, cap pieces and some ballast to be added.

Much difficulty was encountered in removing the sand overlaying the clay, which had accumulated to a great depth. The sand, 40,000 yards, was removed with the aid of departmental dredge *Progress*. Estimates to the amount of $44,819 were forwarded for payment.

During the months of February and March, with the view of making repairs to the landing pier, the sum of $1,579.47 was expended in the purchase of timber, which was delivered and is now lying on the site of the work.

MILLE-VACHES.

Mille-Vaches, is a village in Saguenay county, on the north shore of the River St. Lawrence, about 42 miles below Tadousac.

The work done, during the fiscal year 1911-12, was the blasting and removal of boulders in the channel leading to the wharf.

Amount expended, $626.91.

Work started on September 22 and completed on October 21.

MISTASSINI.

Mistassini, in Chicoutimi county, is a settlement on the river of the same name, 36 miles to the northward of Roberval, on the west side of Lake St. John.

The work done, during the fiscal year, was the driving of piles; these piles were driven to bed rock, on the north side and half of the front of the wharf the sheathing was done, there remaining on that part the flooring. There is a certain quantity of timber on the ground.

Amount expended, $1,477.76.

Work started September 1 and ended on November 15, the five-twelfths were expended; on March 11, 1912, the work was started again and ended on March 30.

MISTOOK (St. Cœur de Marie).

Mistook, in the township of Delisle, is situated on La Grande Décharge of Lake St. John, in the County of Chicoutimi, it is also called St. Cœur de Marie.

Work done, during the fiscal year, was the beginning of a block to close a space between two piers and span wharf, 25 feet long by 20 feet wide on an average height of 13 feet long, the block is ballasted with stone.

Amount expended, $283.49.

Work started September 8 and ended 20th of the same month.

MONTEBELLO.

Montebello (population 2,500), Labelle county, on the north shore of the Ottawa river, a station on the Canadian Pacific railway, is the centre of farming and lumber industries.

At its last session, parliament granted $9,000 towards the construction of a crib-work wharf. A contract was entered into with Messrs. Alf. Bélanger & Co., of Papineauville, on July 19, for the sum of $6,399. Work on wharf was started early in August and completed on March 15.

The wharf consists of a double-deck crib-work landing head with pilework underpinning, 90 feet frontage and 40 feet deep, in the shape of a rectangle; a crib-work approach 18 feet wide and 28 feet long, with platform extension 8 by 14 feet; a stone and earth approach 18 feet wide on top and 172 feet long, and grading and finishing of roadway, 18 feet wide and 203 feet long, for lower landing; a two-story freight shed 18 by 27 feet and a cattle-yard 35 by 50 feet.

Expenditure to March 31, 1912, is $7,518.60.

MONTMAGNY.

Montmagny, in the county of the same name, is on the south shore of the St. Lawrence, 37 miles below Quebec. It is a thriving little town of about 3,000 inhabitants.

Important shippings of lumber are made by Price Bros. & Co., and other firms, to European markets. Besides a pulp mill, there are also two foundries and iron works.

The town is built on both sides of Rivière du Sud which empties into the St. Lawrence, with a perpendicular fall of 20 feet. Below the fall, the river expands and forms what is called the 'basis,' affording shelter for vessels of moderate draught. At the northwest extremity of the basin stands one of the government's wharfs, it is chiefly used for service by small boats of Grosse Ile quarantine and other opposite islands. The other wharf is located in the rear end of the basin; this wharf, built a few years ago, was extended, during the last fiscal year, a length of 100 feet, a width of 30 feet by a height of 23 feet. The work is close-faced and is now completed. The work was begun on the 1st of May, and the final estimate was forwarded on 13 November. The amount expended on the construction was $5,542.50.

The sum of $34.88 was also expended to make repairs on the landing pier, standing at the outer end of the west side of the basin.

Dredging.

From May 22 to June 25, 1911, dredge *Nehoc* owned by L. Cohen & Son, of Montreal, worked in the 'Basin' at Montmagny. 19,607 cubic yards, scow measurement, of hard clay being removed.

The work was performed to widen the channel leading to wharfs and to facilitate the entrance of craft.

MURRAY BAY.

Murray Bay is situated, on the north shore of the St. Lawrence, in the County of Charlevoix, 83 miles below Quebec.

During the present fiscal year, minor repairs were done to the slip, flooring and railing of the wharf.

The expenditure for the present fiscal year, 1911-12, amounts to $553.07.

NATASHQUAN.

Natashquan harbour is situated on the north shore of the Gulf St. Lawrence, about 500 miles from Quebec; the village of the same name has a population of 300 fishermen, there is one R. C. church and 3 stores.

The contract for the construction of the wharf was given, in 1910, to G. R. Phillips, of Cornwall for $17,250, but work was not begun until the spring of 1911.

The plan called for a wharf 250 feet in length from the shore, then making an angle to the north for a length of 150 feet, but after works were started the original plan was changed and the work was built in a straight line, new soundings were made and it was discovered that there was a bad reef about 100 feet north of the head of the wharf, which would have interfered with navigation, so, it was decided to build it straight. The wharf is now completed to 2 feet above high water mark for a length of 400 feet and there are two feet more to have the work completed, as per contract plan.

Total expenditure in 1911-12, is $12,909.50.

11,920 feet of round timber belonging to the department has been sold to G. R. Phillips at 14 cents a foot making a total of $1,668.80 which has been deducted in the estimates.

Work started 1 June; discontinued 15 October.

NEW RICHMOND.

New Richmond, in Bonaventure county, is situated on the north shore of Baie des Chaleurs, 60 miles east of Matapedia, between the two rivers Cascapedia. There is a station of the Quebec and Oriental railway.

On August 8, 1910, a contract was awarded to Mr. John Burns, for the construction of an extension, 150 feet long by 30 feet wide, to the present landing.

It is a round-timber construction, sheathed with close piles and covered with three-inch deals.

The amount of the contract was $5,933.

During the fiscal year 1911-12, a sum of $1,365.83 was paid.

The wharf stands to-day 900 feet long by 24 feet wide and 150 feet long by 30 feet wide, with 14 feet in height at outer end.

NICOLET.

Nicolet, Nicolet county, is a flourishing town on the south shore of the St. Lawrence river, at the foot of Lake St. Peter. It is on the line of the Quebec, Montreal and Southern railway, and on a branch line of the Intercolonial, having good train service in both directions. The population of the town is about 4,000 and of the county 2,000 for nearly half of whom it is the chief place. A ferry makes a daily return trip to Three Rivers, distant about ten miles by water, a steamer running between Montreal and St. Jean des Chaillons calls twice weekly for freight and passengers, and numerous schooners and barges call for gravel and stone. A channel has been maintained by the government to the wharf at this place, and it has been found advantageous in the past to protect the outer end from filling in by a stone jetty.

At the last session of parliament, the sum of $3,000 was voted for the purpose of extending the jetty; on August 4, 1911, authority was received to expend the sum of $1,250 by day labour; on December 21, 1911, the balance of the appropriation became available.

Work was commenced on September 4, and was carried on until September 24, 1911, and consisted in extending the outer end of the stone jetty a distance of 150 feet in a line, making an angle of 135° with the line of the old jetty.

In the execution of the above works, 87 toises of stone were used.

During the fiscal year 1911-1912, the total expenditure was $37,751.79, of which $36,551.79 was for dredging.

Dredging.

From August 14 to September 19 last, L. Cohen & Son's dredge *Little Giant* worked near the mouth of River Nicolet alongside the government jetty.

Some 23,744 cubic yards of clay and sand were removed 2 miles out into the St. Lawrence. Contract price, 20 cents a cubic yard, totalling $4,754.80. Dredging down to 8 feet below zero of gauge. Width of cuts, 22 to 26 feet, and distance advanced over 4,600 feet.

This dredging was rendered necessary on account of deposits made by the St. Lawrence at mouth of River Nicolet.

NORTH HATLEY.

North Hatley, Stanstead county, is situated at the north end of Lake Massawippi. It is a station on the Boston and Maine railway, 12 miles from Sherbrooke. The population is about 450, but increases to about 1,700 for six months of the year due to its superior attractions as a summer resort. A steamer makes 2 trips daily between this place and Ayer's Cliff. It possesses 2 saw mills, flour and feed mill, furniture factory, boat builder, 2 blacksmiths, 1 hotel, 2 general stores, 2 hardware stores, 2 creameries, branch bank, 2 telephone systems, electric light and water systems. The territory for five miles in any direction is tributary to the place, and is an excellent farming district.

At the last session of parliament, the sum of $5,000 was voted for completion of wharfs on Lake Massawippi. On April 1, authority was received to expend the sum of $2,083.33; on December 21, 1911, the balance of the appropriation became available; all by day labour.

Work was commenced April 1, 1911, and continued intermittingly until March 29, 1912, and consisted in completing the stone approach to the wharf, commenced during the last fiscal year; after the wharf had settled to its final position, in grading the approach in gravel, filling the crib with ballast where the original ballast has sunken; levelling the floor of the wharf; providing 4 foot by 18-inch steel plates on corners; driving 8 pile fenders; constructing an open shelter 20 feet by 30 feet, shingled with asbestos shingles and wired for 8 electric lights, providing seats in, and painting same, and painting fenders, snubbing posts and string piece of wharf.

In the execution of the above works, 180 cubic yards rock, 7 squares asbestos shingles, 210 cubic yards gravel, 100 lineal feet eavestrough, 5,557 feet B.M., timber, 12 gallons paint, 850 lbs. iron, 256 lineal feet elm piles, were used.

During the fiscal year 1911-12, the total expenditure was $449.85.

NORTH TIMISKAMING.

North Timiskaming is an old settlement near the Inter-provincial boundary and the head of navigation on the lake of the same name. The rapid development in the Township of Guigues, across the Quinze river, and in the mining district lying to the west has created a demand for better inter-communication facilities, and parliament voted $50,000 towards a steel bridge.

During the past season, borings and further surveys were made, preliminary plans prepared and some work done on contract plans and specifications for substructure of bridge.

Expenditure to March 31, $580.94.

NORWAY BAY.

Norway Bay, Pontiac county, is a summer resort of some importance, on the north shore of Chats lake, on the Ottawa river, and opposite Sand Point, Ont., on the C.P.Ry., main line.

At its last session, parliament granted $11,000 towards the construction of a wharf.

A contract was entered into with Messrs. John & Thomas Moran, of Arnprior, on November 1, for the construction of the wharf, for the bulk sum of $10,040.

The structure, when completed, will consist of a pilework landing head, 49 by 64 feet, a pilework approach 18 feet wide, 288 feet long, with triangular platform extension adjoining the landing head; a crib-work approach, 18 feet wide, 340 feet long with rectangular platform extension, 8 by 14 feet; a stone and earth approach, 18 feet wide on top and 177 feet long. Provision is made for three pilework ice-breakers, 20 by 20 feet, a 2-line wooden railing on both sides of the approach, 805 feet long; and a one-story freight-shed shelter, 9 by 18 feet, with umbrella roof.

The structure will be completed in time for the opening of navigation.

Expenditure to March 31, 1912, is $8,392.43.

NOTRE DAME DU PORTAGE.

On the south shore of the St. Lawrence, 6 miles west of Rivière du Loup, in the County of Temiscouata, is situated the village of Notre Dame du Portage; the place is much resorted to by tourists in summer.

Spring tides rise 19 feet, neaps 13 feet.

In the month of December, 1910, during an ice shove, the wharf was badly damaged; the face timbers of the outer end, 50 feet in length and 5 feet in height, were broken, and the waiting room was smashed.

The wharf was repaired between September 18 and October 15, 1911, and the expenditure was $499.07.

PAPINEAUVILLE.

Papineauville, County of Labelle, is a town of some importance on the north shore of the Ottawa river, 37 miles below Ottawa, on the C.P. Ry. North Shore line.

In 1910, the government bought the old Chabot wharf and site, at a cost of $1,200. This wharf had to be used for the season 1911, and for the accommodation of traffic certain repairs had to be made.

The flooring of the high and low level landings was patched up; the roof of the low level shed was repaired; the shed and platform of the low level landing were loaded with ballast to prevent floating during the high water period and were unloaded as soon as the water had receded. In the spring, the ice was cut around the wharf to prevent damage to the old structure. These works were done respectively between the periods April 6 to 15; June 6 to 30; August 8 to 16.

A contract was entered into with Messrs. Thomas and John Moran, of Arnprior, on September 16, for the construction of a crib-work wharf, for the sum of $6,995.40.

The structure has been completed, and consists of a double-deck crib-work landing head, 80 feet frontage and 37 feet wide, in the shape of a rectangle, resting on the old crib-work substructure; a crib-work approach 16 feet wide, 208 feet long with platform extension 7 by 14 feet, two stone and earth approaches, 16 feet wide on top, 115 feet and 83 feet long, respectively. The roadway to the low level landing was graded and finished for a distance of 160 feet long and 16 feet wide. A two-story freight-shed 20 by 49 feet was built to replace the two original sheds. Extra work authorized to complete wharf included $73.45 for platform 12 by 49 feet and $57 for sheeting the west end of landing head.

The travelled roadway to the ferry, near the wharf, having been used for the new wharf approach, bed rock forming a barrier in west half of roadway was authorized to be blasted and required grading which was effected to restore conditions at a cost of $636.25, based on approximate quantities, at unit rates.

The wharf was practically completed by March 30, and the improvement in the adjacent roadway is to be finished for the opening of navigation.

Expenditure to March 31, 1912, is $8,420.08.

PASPEBIAC EAST.

Paspebiac East, also called Portage, in Bonaventure county, is situated on the north shore of Baie des Chaleurs, at ¾ mile eastward of Paspebiac harbour; it is the meeting place of all the fishermen of the coast.

On December 14, 1910, a contract was awarded to Messrs. Peter Nadeau & Sons, for the construction and completion of a breakwater at a cost of $15,722.73.

This construction is 700 feet long by 20 feet wide. The outer end, at 52 feet, is protected with close piles and the balance is sheathed with 4-inch planks. The flooring, for the whole, is 3-inch deals.

During the fiscal year, 1910-11, the amount of $4,693.58 was paid for materials used.

During the fiscal year, 1911-12, the work was completed and the balance of the contract was païd.

The expenditure for the fiscal year is $9,179.44.

PÉRIBONKA.

Péribonka is situated on the north shore of the river of the same name, in Chicoutimi county; Péribonka river is a tributary of Lake St. John.

The work done, during the fiscal year, was the construction of a freight-shed on piles, 18 by 20, which shed was painted on the outside. The flooring was renewed for

a length of 250 feet with 3-inch deals; the sheathing in the lower part of the wharf was replaced for a width of 20 feet; brush and stones were placed to protect the wharf from the current, and 633 feet of cap-piece were laid.

Amount expended, $872.91.

Work started August 21, ended in the fall, and resumed again in March and stopped March 29, 1912.

PÉRIBONKA AND MISTASSINI RIVERS.

Training Dykes.

Péribonka river, in Chicoutimi county, is one of the tributaries of Lake St. John, and is navigable up to Honfleur for 12 miles; boats ply between Roberval and Honfleur.

Mistassini river, in Chicoutimi county, is also a tributary of Lake St. John, and is navigable up to Mistassini village; boats ply between Roberval and the wharf.

The work done, during the fiscal year, was the continuation of the construction of dykes in both rivers.

Amount expended, $583.06.

Work started August 24 and ended October 24.

PERKIN'S LANDING.

Perkin's Landing, Brome county, is situated on the west side of Lake Memphremagog, 15 miles south of Magog and 6 miles from Mansonville, the nearest railway station.

The wharf accommodates the population of the township of Potton, about 800 people, and during the summer season is used by a considerable colony of summer cottagers. Vale Perkins, the nearest village, and from which it gets its name, is about ½ mile from the wharf. The village contains 1 store and post office, creamery, schoolhouse, and has connections by telephone. Freight for this territory, as far as Mansonville, is brought in by boats when boats are running and consists of feed and lumber.

On June 9, 1911, authority was received to expend the sum of $250 by day labour, in repairing the wharf.

Work was commenced June 27, 1911, and completed March 25, 1912. The work done consisted in grading, with gravel, the approach to the wharf and the wharf itself where the filling which was placed during construction had settled; the riprapping with stone of the two sides of the wharf was completed; 50 cubic yards of gravel were placed on the wharf during low-water season to replace whatever might be washed away during the next high water.

The waiting-room was provided with shutters for windows, locks were placed on the doors, the interior was lined with dressed lumber and seats placed along three sides.

In the execution of the above works, some 100 cubic yards gravel and 750, feet B.M., dressed lumber were used.

During the fiscal year, 1911-12, the total expenditure was $231.84.

PETITE DÈCHARGE (St. Joseph d'Alma).

Petite Dècharge, St. Joseph d'Alma, Lake St. John, is situated 3 miles from the lake, and 7 miles from the village of St. Joseph d'Alma.

There was an amount of $2,000 in the estimates for 1911-12, no work was done.

A guard pier was constructed by the municipality, and now the municipality is asking the department to pay the balance due on this pier.

PETITE RIVIÈRE SAGUENAY.

Petite Rivière Saguenay, on the west side of the Saguenay river, in the county of the same name, is situated 19 miles from the mouth of the Saguenay.

During the fiscal year 1911-12, the construction of the wharf, begun last year, was continued; the flooring has been laid on the head piers and on the span connecting the two piers, part of the sheathing has also been done.

Amount expended, $551.93.

Work started October 5 and completed the 20th of the same month.

PHILLIPSBURG EAST.

Phillipsburg East, originally Missisquoi bay. is an incorporated village in Missisquoi county, on the east shore of Missisquoi bay, 2 miles from St. Armand station, on the Central Vermont railway, and on the Phillipsburg railway. It has 2 churches (Episcopal and Methodist), 2 stores, 2 schools, 2 hotels, 1 branch bank (Eastern Townships); marble quarries are operated in the neighbourhood. Population, 300.

The public wharf at Phillipsburg, built by contract in 1895-97, consists of:

1. A closefaced crib headblock 120 by 25 feet, standing 23 feet high in 13 feet of water at low level;

2. A trestle approach 296 by 30 feet;

3. A stone approach 285 by 30 feet with sides riprapped 1 in 3.

On June 12 and July 20 and 21, 1911, minor repairs to wharf cost $11.50.

PICHÉ POINT.

Piché point, Pontiac county, on the east shore of Lake Timiskaming, opposite Haileybury, is the landing for Guigues township, a prosperous farming district which supplies the mining region on the Ontario side.

At its last session, parliament granted $4,500 towards the raising of Piché wharf and making required repairs and improvements. The raising was not done, owing to the dam at the foot of Lake Timiskaming not being completed. The repairs included, rebuilding small ice-breaker, which was carried off by ice shove last spring; repairing large ice-breaker, the capping having been raised; replacing five broken piles, including taking apart of damaged portion of wharf; repairing the sheeting of the wharf; placing a continuous ice-waling on the south side of approach; replacing some broken bracing in the approach; building a strong boom to be placed between the ice-breakers to further preserve the wharf from the ice shove. Some materials were also procured for proposed raising of old structure and extension of landing head.

Expenditure to March 31, 1912, is $2,693.73.

POINTE À BROUSSEAU.

Pointe à Brousseau is the west point of the municipality of Chlorydorme, 190 miles below Métis, on the St. Lawrence river. The point partly protects a very good fishing harbour except at the time of the spring tides. The work under way is to complete the protection of said harbour by building from Pointe à Brousseau Cape, a breakwater over the shoals to the deep water entrance.

During the last fiscal year, a crib of 75 by 25 feet has been built ready to be placed in position and the roadway built up to 36 feet from shore end of crib.

Expenditure to date, including materials bought for prosecution of work, $1,509.41.

POINTE À ÉLIE.

Pointe à Elie is the extreme south-easterly point of Allright island, 2 miles west of the House Harbour Catholic church.

The steamer *Lady Sybil* calls at Pointe à Elie for mails and freight and for shelter during north-easterly gales.

The construction of a landing pier and breakwater will give the best of shelter for all storms especially from easterly gales, that prevail in the spring.

During the fiscal year 1911-12, the crib commenced the year before was completed, secured into position and built up to coping. A new crib of 100 feet was commenced on shore to be placed in position next spring and the timber partly prepared for the next crib, one thousand yards of stone and earth had to be removed to level and open up the approach along the cliff. Six hundred yards of stone ballast was taken out ready for use. As it was too late in the season when work was resumed this year to launch crib *No. 7,* more tiers were built, the outside protection wall continued for 50 feet and the foundation of 100 by 30 for freight-shed was built up to ten feet above low water level.

The expenditure for the fiscal year is $6,257.62.

POINTE AUX ESQUIMAUX.

Pointe aux Esquimaux, is situated on the north shore of the Gulf St. Lawrence at a distance of 425 miles from Quebec. The village has a population of 800 inhabitants, one Roman Catholic church and several stores.

Of the amount voted at the last session of parliament to continue the construction of an extension to the present wharf at that place, $228.54 has been expended to place bollards.

POINTE-AUX-TREMBLES (en bas).

Pointe-aux-Trembles, (en bas), is situated in the County of Portneuf, on the north side of the River St. Lawrence, some 20 miles above Quebec.

During the present fiscal year, minor repairs were made to the flooring of the wharf.

The expenditure for the present fiscal year 1911-12, amounts to $30.40.

POINTE CLAIRE.

Pointe Claire, is an incorporated village in Jacques-Cartier county, on Lake St. Louis, and on the Grand Trunk railway and Canadian Pacific railway, 14 miles from Montreal. It contains 1 Roman Catholic church, 6 stores, 3 hotels, telegraph and express offices. Population, 850.

The public wharf at Pointe Claire, built in 1899, consists of:—

1. A crib headblock 109½ feet long besides a 12 foot icebreaker, 25 feet high, standing 14 feet high in 6 feet of water at low level;

2. A stone approach 1,000 feet long, from 29 to over 100 feet wide, leading to King's highway;

3. Three storehouses; one 27 feet by 19 feet at down-stream intersection of headblock with approach, and the two others, one 60 by 30 feet and the other 40 by 15½ feet on the stone approach.

From March 12 to 30, 1912, a sum of $610.47 was incurred in covering old flooring with 2-inch spruce planks, sheathing front face with 3-inch spruce, renewing sheathing of ice-breaker with 8 by 8-inch tamarac, strengthening supports of storehouse and painting same.

Work was done by day labour.

The stone approach to this wharf is the property of the Grand Trunk Railway Company, and is leased by the Crown at the rate of $150 a year.

PORT DANIEL.

Port Daniel, in Bonaventure county, is situated on the north shore of Baie des Chaleurs, 45 miles west of Percé.

It is an important village with a population of 1,500 inhabitants mostly engaged in the fishing industry. It is also a good farming settlement. There are two saw-mills, telegraph and post office, several stores and a station of the Quebec and Oriental Railway.

The wharf has the following dimensions: from shore 210 feet long by 22 feet wide, 120 feet by 30 feet and 270 feet by 50 feet, giving a total length of 600 feet; 19 feet high at the outer end, and 7 feet of water at low water spring tide.

During the fiscal year 1911-12, a portion of the sheathing, 120 feet for a height of 6 feet, was renewed. The wharf was raised seven inches for a length of 45 feet and a wooden protection, 120 feet long, was built on the west side of the approach. Timber was also bought for filling the wharf.

Amount expended, $1,680.62.

PORT LEWIS.

Port Lewis, is a post village and port on Lake St. Francis (St. Lawrence river), in Huntingdon, with stations on the G. T. Ry, and the N. Y. Central, and 11 miles from White's station on the G. T. Ry. (Mont., Moore's Jct., and Massena Springs branch), 45 miles south-west of Montreal. It has 1 store, 2 hotels and 1 cheese factory. Population, 109.

From August 15 to September 6 last, departmental dredge *Nipissing* worked near Port Lewis taking out, by cast-over and scow dumping, some 680 cubic yards of hard pan and boulders opposite the Bishop's wharf and another 280 cubic yards of boulders, one mile east immediately downstream of Government wharf.

Width of cuts 25 feet; average depth 3 to 8 feet. Dumping grounds ½ mile distant.

Object of dredging was to offer easier access to both wharfs.

QUEBEC.

Customs Basin.

The Customs basin is situated in front of the Custom house, in the harbour of Quebec.

During the present fiscal year, the wharf was repaired on the east side, by the placing of 25 piles from 47 to 49 feet long of 11 by 11 inches. The coping of the wharf was renewed on a length of 125 feet.

The work started September 27, and completed November 10, 1911.

Dredging.

During the past fiscal year, dredging was done into the basin in order to allow the harbour commissioners to place their pontoon, also to obtain a depth of 17 feet at low water for general traffic. The work was done by the dredge *Progress*.

Pier No. 1.

Work was also done in the harbour to improve the approach channel and obtain a berth at Pier No. 1; the general depth to be obtained is 35 feet.

During the past fiscal year, the *International* removed 53,419 yards, and the *Fundy,* under contract, removed 318,555 cubic yards.

The total expenditure during the past fiscal year, not including River St. Charles work, is $209,439.48.

RACINE PIER.

Racine pier is on the island of Montreal opposite the Montreal Locomotive works, about 1¼ mile above the village of Longue point.

From August 22 to October 25 last, Messrs. L. Cohen & Son's dredge *Maberly* deepened down to 12 feet below zero gauge, a 200-foot wide channel through shoal extending opposite Racine pier. Some 21,350 cubic yards of clay and sand were taken out. Width of cuts, 22 to 26 feet; depth, 1 to 5½ feet, and distance 6,338 feet. Dumping grounds, 2 miles distant.

Contract price, 21 cents a cubic yard.

The object of this dredging is to offer easier access to the Racine pier for ferry boats plying between King Edward park, on Ile Gros Bois, and Montreal.

REPENTIGNY.

Repentigny is a post village in L'Assomption county, on the St. Lawrence, with port on that river at the quay de Repentigny. Its station (1½ miles distant) is St. Paul l'Ermite, on the Canadian Northern Quebec railway. It has 1 Roman Catholic church, 1 store, 1 hotel, and 2 mills. The Repentigny public wharf, built by contract in 1905-08 consists of:—

1st. A close-faced crib headblock 60 feet long outside face (exclusive of 14-foot ice breakwater), 40 feet wide and standing 20 feet high in 8 feet of water at low level;

2nd. A close faced crib approach, 238 by 16 feet with sides vertical, upstream face being sheated with ¼-inch steel plates;

3rd. A stone approach 748 feet long and 18 feet wide at top with sides rip-rapped and slope 1 in 1.

At end of autumn, 1911, and in spring of 1912, a sum of $10 was expended respectively in taking out and putting back in place the movable guard railing at intersection of headblock and crib approach.

RICHELIEU RIVER.

Dredging operations were continued by the dredge *Richelieu* in May, opposite the property of the Department of Militia; in June and July, the dredge worked near the Canadian Pacific Railway bridge; in August, work was done at the sewer outlets of Iberville; in September, October and November, work was done at Lacolle opposite Wilson's wharf where about 15,000 yards of clay was removed.

A total quantity of about 34,000 cubic yards were dredged during the season, at a cost of $25,439.14.

Survey.

The survey was continued from a point near St. Paul de l'Ile aux Noix, northward, where two miles of river were sounded every 20 feet on lines 100 feet distant, over a width of 2,500 feet; for a further 2½ miles on a width of 4,000 feet, thence to the Narrows, a distance of 6 miles, over a width of 800 feet. From St. Paul, southward, towards Lacolle, 2½ miles were sounded, and completed as far as Lacolle bridge.

RIMOUSKI.

The town of Rimouski, in the county of same name, is situated on the south shore of the St. Lawrence, 180 miles below Quebec; its population is nearly 4,000.

It is an important station of the Intercolonial railway; it is also the place where the Royal mails are transferred from steamers to the railway and vice versa.

It is a thriving town and the centre of a large agricultural and commercial country. Industry is flourishing and the town contains several factories and extensive saw-mills and a pulp-wood mill.

The Rimouski wharf, which is 2,240 feet in length, was formerly 20 feet wide only. During these last years, it was widened to 42 feet throughout its full length.

During the last fiscal year, the works done on the wharf consisted in doubling the flooring upon a surface of 18,000 square feet with spruce deals 3 inches thick. The slip was improved and some 6,000 feet B.M. of oak were used to repair the sheathing of the outer face of the wharf.

The foundation of the shed, standing on the outer end of the wharf, was renewed and the shingle covering repaired, the shed is 110 by 27 feet. Some minor repairs were also performed. The work commenced on May 15, 1911, and closed in the month of November; work was also done in March, 1912.

Amounted expended, $7,984.77. Timber paid for to the value of $1,500 is available for further works.

Dredging.

From May 30 to June 20, 1911, and during the month of September of the same year, the departmental dredge *Progress* worked at Rimouski wharf. From June 20 to the month of September, the *Progress* was at Matane.

The work consisted in lengthening and widening the 15-foot deep berth along the west of the outer end of the wharf, to allow vessels drawing 15 feet of water to remain afloat at low tides.

23,640 cubic yards, scow measurements, were removed, the material excavated being moderately hard clay mixed with sand.

The dredge was assisted by tug *Witherby* and the dumping was distant about 3 miles.

RIMOUSKI RIVER.

The Rimouski river, which flows through the western end of the town of Rimouski, and empties into the St. Lawrence, is the natural way by which the products of the thick woody forests of the rear country are conveyed to the St. Lawrence shore. As a protection to the newly built iron bridge also to provide a landing at close proximity to the town for small crafts, the government decided to build a breakwater wharf at the mouth of the river, on the east side.

During the session of 1911, an appropriation of $23,777.77, was made for that purpose, and tenders were called for the construction of the breakwater wharf.

At the close of the fiscal year ended March 31, 1912, the contract was not yet awarded.

RIVIÈRE À LA PIPE.

Riviere à La Pipe, is a small village situated on the north shore of Lake St. John, at the mouth of the river of the same name, 7 miles north of La Grande Décharge.

The work done, during the past fiscal year, was the renewal of the flooring for a length of 378 feet by 24 feet in width; the sheathing on both sides for a distance of

132 feet in length and an average height of 8 feet was done; some 208 feet in length by 24 in width of earth filling was done, the average height of the filling varying from 2 to 10 feet, and space between two piers of dimensions 25 feet by 25 feet was built to a height of 9 feet.

Amount expended, $985.75.

Work was started on August 21, suspended in the fall, and resumed in March and completed on March 30, 1912.

RIVIÈRE AUX VASES.

Rivière aux Vases, Chicoutimi county, on the north side of the Saguenay river, situated in the parish of Ste. Anne de Chicoutimi, about 6 miles above Ste. Anne's village.

A wharf was commenced in 1908-09. During the past fiscal year, the head block was constructed 40 by 30 feet, built up and ballasted 10 feet in height, and the span between the two outer piers was built; the flooring is almost completed.

Amount expended, $2,071.94.

RIVER BATISCAN.

River Batiscan is situated in the County of Champlain and is a tributary of the River St. Lawrence.

During the past fiscal year, a cut, about 2,400 feet long, was dredged, and 35,733 cubic yards of clay and sand were removed to the dumping ground, 1⅓ miles away. About 1,800 feet in length requires to be dredged so as to complete the work required.

The object of this dredging is to provide a seven-foot channel, at low water, from the mouth of the river to the railway bridge.

The expenditure during the past fiscal year was $7,722.46.

RIVIÈRE BAUDE.

Rivière Baude is situated on the north shore of the St. Lawrence river, Saguenay county, in the parish of Tadousac, about 3 miles from the village.

One hundred dollars were spent in repairs to the wharf, and $100 was paid for the transfer of the wharf to the Crown, as per agreement.

Amount expended, $272.10.

Work started August 1 and ended 5th of the same month.

RIVIÈRE DES PRAIRIES.

Rivière des Prairie, or Back river, separates the Island of Montreal from Ile Jésus, starting at foot of Lake of Two Mountains (Ottawa river) and joining the St. Lawrence at Bout de l'Ile, some 27 miles downstream.

From September 8 to November 6 last, departmental dredge *No. 6* worked opposite the village of Rivière des Prairies, 12 miles northeast of Montreal. The river is here a swift rapid, 6 to 9 miles an hour, and strewn with boulders. Some 8,043 cubic yards of hardpan and boulders were cast over in the making of a channel 500 feet long and 100 feet wide. Width of cut, 54 to 57 feet; depth 1½ to 4½ feet. Distance advanced, 1,032 feet.

The object of this dredging is to offer, at low water, 6 feet navigation all through Rivière des Prairies.

RIVIÈRE DES VASES.

Rivière des Vases, in the County of Temiscouata, 125 miles below Quebec, and 6 miles west of Isle Verte.

The sea-grass industry, which is the chief trade of the place, having grown considerably, and to provide better landing accommodation for the people living on the

island opposite, in the year 1900, the construction of an open-faced crib-work pier was begun along the eastern bank of the river.

During the fiscal year ended March 31, 1912, the small pier was extended a length of 40 feet.

The work was performed from September 11 to September 29.

The expenditure amounted to $416.20.

RIVIÈRE DU LOUP.

Rivière du Loup, or the town of Fraserville, is the chef-lieu of the County of Temiscouata. It is situated on the south shore of the St. Lawrence, 114 miles below Quebec. It is a thriving little town of over 7,000 inhabitants, and contains several manufactories, including two pulp-mills.

The Rivière du Loup point, where the wharf is located, is distant 2½ miles from the village. It is one of the best known and most frequented summer resorts of the St. Lawrence.

There is a branch of the Intercolonial railway extending from the station to the outer end of wharf, a distance of about 6 miles.

Spring tides rise 19 feet, neaps 12 feet.

The renewing of the superstructure of the wharf, commenced four years ago, was continued and completed during the last fiscal year ended March 31. A length of 450 feet on half the width of the wharf, by a mean height of 2½ feet, has been entirely renewed. Some sheathing was also done on the east face of the wharf with spruce 4-inch thick. The work was commenced on August 17, and closed on October 24; it was done by day labour.

The amount expended was $4,520.60, including $1,624.47 for dredging.

RIVIÈRE DU LOUP (en haut).

This river which flows through the County of Maskinongé, is divided into several tributaries; the main branch of the river taking its rise at the foot of the Laurentides, at a distance of 74 miles north and empties into the St. Lawrence on the northern shore of Lake St. Peter at Louiseville, 21 miles above Three Rivers, Que. The extent of the basin of the watershed of this river measures a maximum width of 19 miles of fertile land in the said county.

The river is navigable, at its outlet, for a distance of about 3½ miles, to the government wharf at Louiseville, for boats drawing less than 4 feet of water, during the low water season.

The population of the town of Louiseville and the five parishes interested in navigation, having several stores, shops and factories, is 11,993.

Dredging operations were performed at Rivière du Loup and Lake St. Peter, by dredges under contract with The W. J. Poupore Co., Ltd., from May 4 to August 12, 1911, also by the departmental dredge *No. 3,* from July 29 to November 7, 1911. 52,030 cubic yards of clay and sand were removed by dredge *Prince Willie,* for a 5-foot channel, from section 15,000 feet to section 14,000 feet, also a 7-foot channel, from section 11,600 feet to 4,000 feet and from 2,100 feet to the outlet. And on Lake St. Peter from section 2,000 feet to section 5,336 feet.

30,324 cubic yards of clay and sand were removed by dredge *Pontiac,* the property of The W. J. Poupore Co., Ltd., from May 8, 1911, to June 21, for a 7-foot channel, from section 11,400 feet to section 10,500 feet and from section 10,150 feet to section 7,100 feet and also from section 6.900 feet to 6,500 feet and from section 4,000 feet to 2,550 feet at the outlet. The section 1,500 feet to 1,000 feet was also dredged to 7 feet.

2,008 cubic yards of clay and sand were also removed by dredge *Duke of York,* a third dredge of the company from June 2 to 5, 1911, from section 7,100 feet to section 6,900 feet above the outlet.

84,362 cubic yards of clay and sand were removed by the W. J. Poupore Co. Ltd., during the season of 1911, and 9,475 cubic yards of clay and sand were removed by the departmental dredge *No. 3* from the outlet, section 0 to section 1,200 feet, and above the saw-mill, removing shoals obstructing the channel.

RIVIÈRE GIRARD.

Rivière Girard, in the County of Temiscouta, 132 miles below Quebec and about 1½ miles below Ile Verte church.

In the year 1907-8, a small wharf was built on the east side of Rivière Girard, and extended in the year 1908-9, the dimensions being now 210 feet long, 12 feet wide on a mean height of 8 feet.

During the last fiscal year, this wharf, which had been damaged during last winter, was repaired through a length of 45 feet. The work was commenced on October 2, and completed on the 20th.

The amount expended was $249.03.

RIVER GODEFROYE.

River Godefroye is a small river in Nicolet county, rises in the seigniory of Roquetaillade, and running northeast falls into the St. Lawrence opposite Three Rivers.

The River Godefroye public wharf, built by contract in 1906, consists of:

1. A pile headblock 32 feet 3 inches wide formed of two portions, one 60½ feet outside face, the other 36½ feet, the two making an angle of 125 degrees, the whole standing 11 feet 9 inches above zero gauge; lower landing at upstream end for small boats;
2. A stone approach 611 feet long and 16 feet wide;
3. A store house 22 by 16 feet on headblock.

During the autumn of 1911, the sum of $25 was paid to Mr. Desilets for the 12-year lease of a small piece of ground for the placing of a beacon to direct entrance of River Godefroye to government wharf.

A further sum of $10 was paid Mr. Jos. Hélie for 2 years previous lease of similar ground.

Dredging.

From August 14 to September 2 last, Messrs. Dufresne & Marchildon's dredge *Capital* worked at the mouth of River Godfroye, a shoal 870 feet long and some 30 feet wide being removed down to 6 feet below zero gauge. Some 7,062 cubic yards of sand and clay were taken out. Depth of cut, 1½ to 5 feet; distance advanced, 2,375 feet. Dumping grounds ½ mile distant.

Contract price, 22 cents a cubic foot.

The object of this dredging is to offer easier access to government wharf.

RIVER LAGUERRE.

Laguerre river, a sluggish stream emptying into Lake St. Francis, on the St. Lawrence, about 3 miles north of Laguerre, Huntingdon county, is navigable for vessels drawing 4 feet, but deeper, say 9 feet, after level of its mouth is passed. A bridge prevents anything higher than 6 feet from passing it.

On August 23 last, the construction, in reinforced concrete, of bridge and regulating gates at the mouth of River Laguerre was begun.

The gates, 6 in number, are each 6 feet wide and 15 feet high. Length of bridge proper, 42½ feet; stone approaches, 48 feet and 29 feet long, respectively, 20 feet wide at top, with sides riprapped 1 in 1.

Work suspended November 18 on orders from headquarters; resumed December 1, and suspended again on December 22.

Work was done by day labour.

The object of these regulating gates is to allow the flow of River Laguerre into Lake St. Francis when the latter is at a lower level than former and to prevent Lake St. Francis from overflowing into River Laguerre when the latter is at a lower level than former. Previously, this overflowing caused the flooding of over 20,000 acres of land.

The expenditure for the fiscal year, 1911-12, is $8,593.95.

RIVER NICOLET.

Nicolet, a river of Quebec, rises in Lake Nicolet and falls into Lake St. Peter at Nicolet (south shore of the St. Lawrence): length, 60 miles. It is a rapid stream, but navigable for some distance above the village.

Messrs. L. Cohen & Son had four dredges working in River Nicolet during the summer of 1911:—

Little Giant, from May 13 to August 12.
Central City, from May 13 to July 25.
Lanark, from May 17 to July 25, and from August 10 to August 30.
Maberly, from May 17 to August 9.

Dredging started from the government wharf, upstream. Some 112,793 cubic yards, place measurement, of clay, sand and boulders, and 33⅓ cubic yards of rock (boulders over 2 cubic yards) were removed and dumped into the St. Lawrence from 2½ to 3½ miles downstream.

Channel dredged 5,931 feet long, 50 feet wide, and to a depth of 10 feet below zero gauge. Width of cuts 18 to 26 feet.

Contract price 30½ cents a cubic yard in situ for class 'B' material and $4 for rock.

The object of this dredging was to obtain a 10-foot navigable channel in River Nicolet from the St. Lawrence up to the town of Nicolet, a total distance of about 3 miles.

RIVIÉRE NOUVELLE.

Rivière Nouvelle, in Bonaventure county, takes its rise in the County of Matane, and passing through farming lands, in the parish of Saint-Jean l'Evangéliste, flows out into Baie des Chaleurs at Saint-Omer.

During the fiscal year, 1911-12, thirty-two directing piers were built: twelve of 8 feet square by 6 feet high, and twenty of 10 feet square by 6 feet high.

Eighteen of these piers were filled with wood and the balance, 14, with stone.

Amount expended, $657.04.

RIVIÉRE OUELLE.

The pier is situated at Point aux Orignaux, 5 miles distant from the village of Rivière Ouelle in the County of Kamouraska, on the south shore of the St. Lawrence, opposite Murray Bay. A branch of the Intercolonial railway, built from Rivière Ouelle station to the outer end of the wharf, connects with a steamer which crosses the St. Lawrence several times a day during the summer season, calling at Murray bay and other places on the north shore. In winter the service is also daily.

From September 1 to the 20th, and from October 7 to November 11, 1911, the railway-guards, on a length of 500 feet, on both sides of the wharf, which had been blown down during a storm in the spring, were rebuilt. The planking of the wharf was also repaired.

In order to continue the strengthening of the west face, by placing pitch pine piles, sunken into the bottom and well secured to the face timbers, 55,711 feet B.M., of pitch pine, in pieces 40 feet long and 9 by 12-inch dimensions, were purchased. The amount paid for this timber was $2,228.48; it is lying near the wharf and is available for works next summer.

The total expenditure for the fiscal year amounted to $3,041.85.

RIVER RIGAUD.

Rigaud, a post village and seigniory in Vaudreuil county, 2 miles south of the Quai de Rigaud, a port of call on the Ottawa river. It is a station on the Canadian Pacific railway (Montreal to Ottawa short line), 16 miles north-west of Vaudreuil, and 41 miles west of Montreal. It is 8 miles east of St. Eugene, Ont., on the same line, and 75 miles east of Ottawa. It is the seat of Bourget college and St. Anne's convent. The sanctuary of Notre Dame de Lourdes, on Rigaud mountain is, in the summer season, a place of frequent pilgrimage. The village has a Roman Catholic church, 6 stores, 1 foundry, 1 branch bank, saw, grist, carding and fulling mills, besides express and telegraph offices. Population of village about 800; of parish, 1,050.

From June 17 to July 22, departmental dredge *Challenge,* and from July 27 to August 5, departmental dredge *Nipissing* worked in River Rigaud, the latter one-third mile from mouth of river and the former one-quarter mile upstream.

Challenge removed 4,416 cubic yards of clay, gravel and boulders in deepening channel 710 feet long and from 25 to 100 feet wide, to a depth of 9 feet. Width of cuts, 25 to 30 feet; distance advanced, 1,708 feet. Dumping grounds, 1½ mile downstream in Lake of Two Mountains.

Nipissing removed a ledge 140 feet long and 25 feet wide of boulders and hardpan. Quantity, 536 cubic yards. Distance advanced, 280 feet. Dumping grounds, one mile out.

Total quantity, 4,952 cubic yards.

Object of dredging was to improve channel leading to the two government wharfs at Rigaud.

RIVER ST. CHARLES.

On August 8, 1910, a contract was entered into between Mr. Horace Dussault and the department for the dredging of a 15-foot channel, 300 feet wide, into the river St. Charles, from the St. Lawrence, to the Quebec Railway, Light and Power Company's bridge.

Up to date, 864,486 cubic yards have been removed, and there still remain 354,000 cubic yards of sand to be removed, at a cost of nine cents a yard, to complete the work.

This channel is required in order to permit vessels intending to enter the river to reach as far as the proposed dam and locks. The proposed work is fully described at page 10, part 1, of the annual report for 1910-11.

The expenditure during the past fiscal year was $90,403.95.

RIVER ST. LOUIS AT ST. LOUIS DE GONZAGUE.

St. Louis de Gonzague, a post settlement in Beauharnois county, 1 mile from St. Louis station, on the Ottawa and Swanton branch of the Grand Trunk railway. It contains 2 churches, 2 stores and 5 butter and cheese factories, 1 convent and 1 college. Population of parish, 1,200.

From April 19 to November 4 last, departmental dredge *No. 1,* worked in River St. Louis, continuing the improvements started in 1904 and pursued every year since.

The deepening was advanced 2,900 feet, from station 75 to station 104, the latter 2 miles above original starting point at Symon's bridge. Some 1,654 cubic yards of rock were blasted and 16,947 cubic years of clay and boulders cast over on both sides. Channel 40 feet wide and to a depth of 6 feet.

The object of this dredging is to increase the flowing section of river and stop the disastrous inundations occurring every spring and after heavy rainstorms.

RIVIERE SAULT AU MOUTON.

Riviere Sault au Mouton is situated on the north shore of River St. Lawrence, Saguenay county, 2 miles west of the village of Mille-Vaches.

The work done during the fiscal year was the continuation of the removal of boulders in channel of the river with the view of improving navigation.

Amount expended, $416.84.

Work started September 19 and ended October 14, 1912.

RIVIERE TROIS PISTOLES.

Trois Pistoles river empties into the St. Lawrence about 3 miles west of the village of Trois Pistoles, in the County of Temiscouata. The station of the Intercolonial railway is called Tobin. A railway branch about 6 miles long, extends from this station to a pulp mill on the river. A large sawmill is also operated, and important shipments of lumber are made to European markets.

To meet requirements and provide facilities for the shipping of lumber, the government contemplated the building of a wharf at the mouth of the river. With that object in view, during the month of September, 1911, timber was bought for the sum of $1,523.76, out of the $4,000 appropriated, and in the month of February, 1912, the sum of $2,465 was also used to procure an additional quantity of timber, forming a total expenditure of $3,988.76 for the last fiscal year.

At the close of the last fiscal year, the construction of the proposed wharf was not yet commenced.

RIVIÈRE VERTE (East Side.)

Rivière Verte, which flows through the parish of Isle Verte, in the County of Temiscouata, empties into the St. Lawrence, about ¾ of a mile west of the Isle Verte church.

To further improve the channel of the river, hand dredging was performed and a large quantity of sand was removed, thereby widening and deepening the channel and facilitating the overflow during spring freshets.

The work begun on September 1, was completed October 17.

West Side.

The landing pier built along the western side of the River Verte, near its mouth, for the accommodation of people engaged in the sea moss industry, was extended a length of 62 feet during the fiscal year ended March 31, 1912; the total length of the pier is now 482 feet, the width is 15 feet and the mean height 8 feet with an earth backing.

The pier consists of an open-faced light crib-work, filled with stone.

The work performed between September 4 and 30.

The amount expended was $614.90.

ROBERVAL (BREAKWATER).

Roberval, in the County of Chicoutimi, is built on the east side of the River Ouitchouanish, near its mouth, on the south shore of Lake St. John, and 200 miles east of Quebec.

Work done during the fiscal year 1911-12, was the construction of a breakwater 200 feet long, 20 feet at bottom and 14 feet on top, the whole fully ballasted.

Amount expended, $2,994.84.

Work was started on August 27 and ended on September 27, 1911, resumed on February 20, 1912, and completed on March 23.

RUISSEAU À LOUTRE.

Ruisseau à Loutre is a small river in the County of Rimouski, emptying into the St. Lawrence about 25 miles below Matane. It forms a cove used as a harbour by fishermen and where lumber shipped to European markets is loaded from lighters to ships anchored outside.

In order to improve the cove and to give more facilities for the landing of boats, the sum of $501.87 was expended during the last fiscal year to remove boulders; the work was carried on between September 4 and 27.

RUISSEAU A SEM.

The cove called Ruisseau à Sem is situated on the south shore of the St. Lawrence, in the County of Rimouski, 30 miles below Matane.

The cove is used as a harbour for the landing of fishing boats and also for the loading of lumber, from lighters, to ships anchored outside.

To improve the harbour, the sum of $400 was expended for the removal of boulders and clearing out stones obstructing the entrance.

The work was commenced September 2, and completed October 8, 1911.

ST. ALEXIS WHARF.

St. Alexis, Baie des Ha Ha, in Chicoutimi county, is situated on the south shore of the baie on the River Sagnenay, about 63 miles from tis mouth.

For details of construction of wharf see annual report Department of Public Works, 1909, page 122, part iv.

The work done, during the last fiscal year, was the completion of the extension which is in 'L' shape, 50 feet by 25 feet and 35 by 30 feet, giving a frontage of 60 feet.

The old wharf was levelled where necessary, and planked over. Where wharf stood at proper elevation, the planking was doubled with 3-inch planks.

Expenditure on contract, $3,779.32.

ST. ALPHONSE DE BAGOTVILLE.

St. Alhponse de Bagotville, is situated at the head of Ha Ha bay, on the southern side of the River Saguenay, 66 miles from its mouth.

The work done, during the fiscal year, 1911-12, consists in the construction of a pier of 40 by 40 and 19 feet high built with round-faced timber to be sheathed. Twenty-five toises of ballast stone were put in the crib to make it safe from accidents.

Amount expended, $1,261.46.

Work started on August 28 and completed December 28, 1911.

ST. ANDRÉ.

The village of St. André, in the County of Temiscouata, is situated on the south shore of the St. Lawrence, about 15 miles west of River du Loup and 100 miles below Quebec.

The place is somewhat frequented as a summer resort; it contains a foundry and an important machine factory.

Spring tides rise 19 feet; neaps, 12 feet.

The wharf owned by the Department of Public Works at St. André, consists of an earthern embankment 850 feet long with a mean height of 6 feet, and nine piers connected by platforms of 30 foot spans.

In the course of the fiscal year ended March 31, 1912, an addition to the wharf, 100 feet long, 30 feet wide on a mean height of 17 feet, was constructed; it consists of a close-faced crib-work filled with stone, and placed in a straight line with the main body of the wharf.

The work was carried on during the month of August, September, October and completed November 17.

The cost of the construction was $4,374.95.

During the month of March 1912, the old part of the wharf, having been damaged by ice, was repaired with an expenditure of $1,020.48.

The total amount expended during the fiscal year being $5,395.43.

ST. ANDREWS.

St. Andrews, Argenteuil county, is located on the North river, 3¼ miles from the Ottawa river.

In 1910, parliament granted $5,000 towards the construction of a wharf. A contract was entered into with the Bridge and Wharf Builders Company, of Montreal, for the sum of $3,245. Work was started March 16, 1911, and wharf was completed June 23.

The wharf consists of a landing head of two cribs, 18 feet wide 50 feet long, and placed 14 feet apart to form a block 50 feet square; a stone and earth approach 18 feet wide on top and 72 feet long; a freight-shed, 16 by 24 feet.

The total cost of wharf is $3,688.61.

Expenditure for the fiscal year is $1,558.21.

STE. ANGÈLE DE LAVAL.

Ste. Angèle de Laval, is a post village and parish of Nicolet county, on the St. Lawrence river, opposite the City of Three Rivers, on the Three Rivers branch of the Grand Trunk Railway, 34 miles from Arthabaska station, it contains 1 Roman Catholic church, 7 stores, 2 temperance hotels, 2 restaurants, several mills and factories and telegraph and express offices. Bank at Victoriaville. Population of parish, 1,136. The Ste. Angèle de Laval wharf, built by contract in 1907-08, is immediately downstream of the Doucet Landing, Grand Trunk Railway, wharf and consists of:

1. A pile headblock 85½ by 65 feet standing 25 feet high in 11 feet of water at low level;
2. A trestle approach 72½ by 20 feet;
3. A stone approach 26½ by 20 feet with sides riprapped and sloped 1 in 1;
4. A stone approach and right-of-way 720 feet long and 30 feet wide leading to King's highway;
5. A freight-shed 20 by 30 feet at western intersection of headblock with pile approach.

At the end of June 1911, a sum of $25 was expended in repairing, by day labour, abutments and stringers of small culvert in 30 feet approach.

Dredging.

Dredging was commenced, under contract with Messrs Dufresne & Marchildon of Three Rivers, September 15, and continued until October 25, 1911, and consisted in the removal of 14,704 cubic yards, scow measurement, of clay, sand, hardpan and boulders. Average depth of cutting, 4 feet; finished depth, 11 feet below extreme low water level or below zero of gauge at Three Rivers.

ST. ANICET.

St. Anicet, is a post village and parish in Huntingdon county, near Port Lewis, on Lake St. Francis, an expansion of the St. Lawrence river. The nearest station (10 miles distant) is Whites, on Massena Springs division of the Grand Trunk Railway, 31 miles from Massena Springs, and 7½ miles from Huntingdon. It has 1 Roman Catholic Church, 6 stores, 2 hotels, grist and saw mills and telegraph and express offices. Population of parish, about 5,000.

The St. Anicet wharf, built in 1862 and added to several times since, consists of:

1. A close faced and stone filled crib headblock 96 feet long outside face, 21 feet 5 inches wide at upstream end and 41 feet 9 inches at other end with shoreward crib extension of 58 feet 9 inches by 34 feet; outer face standing 13 feet 3 inches high in 7 feet 3 inches of water at low level;

2. A stone pier and span approach 173 feet 9 inches by 34 feet;

3. A freight-shed 45 feet 3 inches by 12 feet 2 inches on western shore end of crib extension of headblock;

4. A cattleyard 15 by 15 feet at shore end of approach;

From August 22 to October 24, 1911, and from March 2 to 30, 1912, extensive repairs were made to the wharf. The pier and span approach on a length of 125 feet was filled in with stone with a sand and gravel layer on top; five tiers of 12 by 12 inch timber at south-western corner of headblock, and four tiers of front face and eastern side with cross-ties and longitudinals renewed, the flooring of shed rebuilt in concrete and the pine flooring of headblock improved.

Work was done by day labour.

The expenditure for the fiscal year 1911-12, is $2,496.77.

STE. ANNE DES MONTS.

Ste. Anne river flows into the St. Lawrence at the west end of the village of Ste. Anne des Monts, one of the oldest and most important establishments of the Gaspé peninsula, some 100 miles below the nearest railway station, Little Metis. Several saw-mills are in operation.

During the last fiscal year, the breakwater, composed of isolated triangular cribs over fascines mattresses, retained in position by stones and concrete blocks, on the east side of the outlet of the St. Anne river, has been partly built towards the shore for a length of 585 feet, altogether forming thereby a good and safe outside harbour with a depth of 14 feet at low water springs, along the west training pier. On account of the lack of funds and also of the working season, the last 228 feet of mattresses were not covered with any timber works.

Expenditure to date, including materials bought for prosecution of work, $7,066.13.

ST. CHARLES DE CAPLAN.

St. Charles de Caplan, in the County of Bonaventure, is situated on the north shore of Baie des Chaleurs. It is one of the principal business centres of Bonaventure county, farming and fishing being the most important features of the locality.

On May 31, 1910, a contract was awarded to Messrs. John Burns and Thomas P. Charleson to build an extension of 400 feet long by 30 feet wide to the present wharf, for the price of $14,933.

It is a close-faced construction standing in 10 feet of water at low water spring tides.

As it stands now, the wharf is 475 feet long by 20 feet wide and 400 feet long by 30 feet wide, making a total length of 875 feet.

The expenditure for the fiscal year 1911-12 was $11,998.

STE. CROIX.

On December 5, 1910, the department entered into a contract with Mr. Onésime Poliquin, of Portneuf, County Portneuf, for the construction of a certain length of landing pier, on a site named 'L'Islet' about 1 mile west of the local parish church of Ste. Croix; amount of contract being $22,000.

The structure consisted of three detached cribs with spaces or openings of 25 feet between each, there being already an inshore abutment pier of 250 feet built; following the three detached cribs and last opening is a full length of 815 feet of cribwork, forming a total length, when planked over, of 1,335 feet; all the work, sides and ends, is open-faced, measuring 20 feet on top with batter of 1 in 10 feet; the height throughout will not exceed 11 feet at highest; one half of which (substructure) is of spruce, the other half (superstructure) to be of cedar timber.

At close of 1911, contractor had the full length built up to 5½ feet and in addition, as security against ice or spring freshets injuring outer end, he built up the last 120 feet to its full height of 8 and 11 feet with 60 feet of specified sheathing.

All the cribs are ballasted to full height.

Expenditure for the fiscal year is $10,751.25.

ST. DENIS.

St. Denis is a flourishing post village and parish of St. Hyacinthe county on the river Richelieu, 18 miles from St. Hilaire station and 7 miles from Contrecœur, on the Montreal and Sorel railway. The village contains 1 Roman Catholic church, 1 convent, 1 hospital, 8 primary schools, 1 commercial college, 1 bank, 1 savings bank, 10 stores, 1 hotel, saw, flour and planing mills, 6 butter and cheese factories, 3 carriage factories, 3 furniture factories, cutlery and sash and door factories, 1 tombstone manufactory, 1 bank (Provincial) and telephone office. Population, 870.

The pile wharf, built in the autumn of 1909, consists of:

1. A headblock 75 feet long exclusive of 14 feet ice-breaker, 32 feet 5 inches wide, standing 19 feet 3 inches high in 9 feet of water at low level;

2. A stone approach from 56 to 82 feet long and 35 feet wide with sides riprapped and sloped 1 in 1;

3. A freight-shed 20 by 24 feet at downstream intersection of headblock and approach.

From June 13 to 17, 1911, a sum of $40 was expended in completing shed and improving top of stone approach by the addition of 20 loads of gravel and sand.

ST. EDOUARD DES MECHINS.

The village of St. Edourad des Mechins in the County of Rimouski, is situated on the south shore of the St. Lawrence, 35 miles below Matane. It has a population of 800, consisting chiefly of fishermen and lumbermen. Some farming is also done. For the accommodation of people in this vicinity, and more so, to provide a landing and shelter to vessels plying along that long stretch of coast from Matane to Cap Chat, from which they were totally deprived, the government built a wharf at Mechins. During the last fiscal year, the raising and levelling of the superstructure of the outer end of the wharf, which was commenced during summer 1910, was continued but could not be completed. The work was performed between the 1st and the 30th of September.

ST. ELOI (POINTE À LA LOUPE).

St. Eloi is a post village of the County of Temiscouata, on the south shore of the St. Lawrence, 21 miles east of Rivière du Loup.

The small landing pier, built in 1909, received some damage from ice during the winter of 1910, for the repair of which the sum of $100 was expended during the month of July, 1910.

During the last fiscal year, with the view of extending the wharf in order to render it more efficient and provide better accommodation, timber was bought for a sum of $980.58; it was delivered on the site of the wharf and is now available to construct the work during next summer.

STE. EMÉLIE (LECLERCVILLE).

In the month of November last, Contractor J. A. Lemay completed the building of the roadway from shore to isolated block at Ste. Emélie and enlargement of block according to his contract with the department, dated June 27, 1910, for a sum of $27,700. The work consists in the building of a dry stone approach of 60 feet long, east to west, along high water line, average width 24·9 feet, against which (at west end) abuts a roadway of open face work, running out in a northwesterly direction, 588 feet, to connect with enlarged block.

The block's previous dimensions on top were 28 feet (north and south) by 58 (east and west) with a slope of 1 in 1 foot, or 15 feet on west end and another slope of 2 in 2 feet on south elevation; it has been enlarged to 51 feet by 58 feet on top; the south elevation being plumb; the west follows the batter already on and runs inshore on roadway approach in line with southwest line of old block; the roadway has a width of 20 feet on top, from outside of capping. The block measures 18 feet in height at its outer end.

During abnormal low tides last fall, owing to deepening of ship-channel, the line of low water receded at least 30 feet from its usual mark at southeast corner of isolated block, before enlargement, leaving no water at outer end where 2 feet remained before.

The work was well built and much needed.

Expenditure for the fiscal year is $18,757.50.

STE. FAMILLE, I.O.

Ste. Famille is situated on the north shore of the Island of Orleans, in the County of Montmorency, about 16 miles below Quebec.

During the present fiscal year, on April 10, 1911, a contract was entered into between this department and Mr. Napoléon Trudel for the construction of an extension to the wharf, which extension consists of two cribs, each of the following dimensions: length, 100 feet, and width, 30 feet; the work was started on August 28, 1911, and up to March 31, 1912, the following work was executed: 5,650 cubic yards of crib-work with stone filling.

Minor repairs were made to the old portion of the wharf.

The expenditure for the present fiscal year, 1911-12, amounts to $12,621.56.

ST. FRANÇOIS NORTH, I.O.

St. François North is situated on the north side of the Island of Orleans, in the County of Montmorency, 25 miles below Quebec.

During the present fiscal year, only a small percentage of the repair works required was executed. The whole of the front of the wharf was renewed and placed in perfect condition, 150 feet of flooring was replaced with new floor-stringers underneath; five mooring-posts were renewed, and the coping was renewed on a length of 150 feet.

During the winter, all the timber and iron required to execute the balance of repairs were purchased.

The work was started on September 10, and completed on December 7, 1911.

The expenditure for the present fiscal year, 1911-12, amounts to $4,719.12.

ST. FRANÇOIS SOUTH, I.O.

St. François South is situated on the south shore of the Island of Orléans, in the County of Montmorency, 25 miles below Quebec.

During the present fiscal year, the movable slip in the wharf was completed and placed in perfect working order by building a trestle tower on which was erected one of the new patent slip hoists, of the same style as the one installed at Murray bay.

The work was started on November 10 and completed on 23rd of the same month.

The expenditure for the present year 1911-12, amounts to $899.54.

ST. FRANÇOIS DU LAC.

St. François du Lac, Yamaska county, is the county town of Yamaska county, situated on the west side of the River St. Francis, 10 miles above its mouth, where it empties into Lake St. Peter. It is a station on the Quebec, Montreal and Southern railway. The population of the town is 700; it has a post office, 2 telephone systems, Roman Catholic church, convent, 3 general and 3 grocery stores, 1 sash and door and a metal cheese basin factory. The registry office for the county is situated here, and the sittings of the Circuit Court are held here. Abenakis Springs, a very popular health resort, is situated on the river, about 5 miles below St. François du Lac. The surrounding district is rich agriculturally; exports are hay, butter, cheese, cattle and pine timber.

Work was commenced on June 8, 1911, and carried on intermittingly until January 3, 1912, and consisted in gravelling the roadway in front of the government property; in repairing the roof of the warehouse on the wharf, and in moving the warehouse above high water line to a safe position.

In the execution of the above works, some 48 cubic yards of gravel were used.

During the fiscal year 1911-1912, the total expenditure was $21,415.98, including $21,125.22 for dredging.

Dredging.

Dredging was commenced May 8, and continued until November 16, 1911, and consisted in the removal of 178,979 cubic yards, scow measurement, of clay, sand and gravel, at the following places:—

From St. François du Lac wharf, one cut was made 1,920 feet long, 45 feet wide and to a depth of 8 feet below low water level, average depth of cut, 4 feet;

Opposite Notre-Dame de Pierreville, one cut 290 feet long, 45 wide and to a depth of 8 feet below low water level; another cut 950 feet long, 45 wide and to an average depth of 9 feet below low water.

Opposite the north end of Ile St. Joseph, one cut 2,110 feet long, and two cuts 1,630 feet long, 45 feet wide and to a finished depth of 8 feet below low water.

At mouth of river, one cut 1,632 feet long; three cuts 1,153 feet long, and two cuts 480 feet long, average width 22 feet, and average depth 8 feet below low water.

Across the Grand Bay of St. François to the main channel of the St. Lawrence, one cut 4,800 feet long; two and a half cuts 1,920 feet long, 25 feet wide, and average depth 8 feet below low water.

La Compagnie Industrielle de Sorel removed 117,134 cubic yards, and Bastien, Laurin & Leitch, of Montreal, removed 61,845 cubic yards, scow measurement.

STE. GENEVIÈVE AND ÎLE BIZARD.

Ste. Geneviève, is a post village and parish of Jacques-Cartier county, on Rivière des Prairies, 5 miles from Beaconsfield, and 5 miles from Pointe Claire, on Grand Trunk railway and Canadian Pacific railway. The village contains 1 church, 1 convent, 3 hotels, 1 butter and cheese factory, 1 telegraph office and 8 stores. There are excellent mineral springs in the vicinity. Population, 729.

Ile Bizard, opposite Ste. Geneviève on the other side of River des Prairies, is 5 miles long and three miles wide. The Ste. Geneviève-Ile Bizard bridge approaches, built in 1890-1891, consist of six close-faced crib piers, 26 feet 8 inches long at bottom and 20 feet at top with upstream face inclined 1 in 1½, from 18 feet to 19 feet 1 inch wide and standing from 13 to 15 feet above low water line. The abutments are cribs of same length as piers but 20 feet wide. The distances between piers, varying from 28 feet 2 inches to 30 feet 6 inches are spanned with iron beams and pine flooring. Length of approach on St. Geneviève side = 164 feet 7 inches; on Ile Bizard side = 164 feet 1 inch.

By a contract, entered into between the Crown and Messrs. Morrow & Beatty, the whole superstructure of piers and abutments were renewed in 2-foot reinforced concrete. The floor stringers and 3-inch pine flooring were also replaced. Contract price, $8,520.

Work was begun September 1, 1911, and contract satisfactorily completed November 30.

From December 1, 1910, to August 7, 1911, an expenditure of $243.55 was incurred in repair to and maintenance of flooring of these approaches. Work was done by day labour.

ST. GEORGES DE MALBAIE.

St. Georges de Malbaie cove is situated just opposite the St. Georges de Malbaie church in the centre of the parish, some 6 miles north-west of Point St. Pierre and 9 miles south-east of Douglastown, giving altogether some 15 miles of coast where fishermen are exposed to north and easterly winds and, in case of storms, have to seek refuge at Gaspé or use such small flats that they can haul their boats high and dry every night.

A breakwater, composed of half star-shaped isolated cribs placed at 20 feet spaces, had been commenced on October 10. One crib has been built up to 4 feet above low water level and will be placed in position next spring.

Expenditure to date, including materials bought for prosecution of work, $1,016.92.

SAINT GODFROY.

Saint Godfroy, in Bonaventure county, is situated on the north side of Baie des Chaleurs.

This is an important place with a population of about 2,500 inhabitants, who for the most part, are engaged in the fishing industry. Farming is also flourishing there.

A wharf 600 feet long by 20 feet wide with 3¼ feet at low water, outer end, was built in 1904-05.

During the fiscal year 1911-12, stone was purchased to an amount of $202.56

ST. HILAIRE.

St. Hiliare is a thriving post village in Rouville county, on the River Richelieu, 1 mile from St. Hilaire station. It contains 1 Roman Catholic church, 1 convent, 1 academy and several stores and mills. Population, 500.

St. Hilaire wharf, built in 1909-10, immediately opposite parish church, consists of a close-faced crib 59 feet 11 inches long outside face with 22 feet return wings at each extremity, stone filling between with macadamized top.

The latter stands 18 feet above bottom of river with crib sunk in 8 feet of water at low level. The freight-shed is 24 feet by 15 feet 5 inches.

During June, July and August, 1911, an expenditure of $109 was incurred in repairing riprap along upstream side of wharf and in the making of a concrete sidewalk connecting shed with slip.

Work was done by day labour.

ST. IGNACE DE LOYOLA EAST.

St. Ignace de Loyola is a post village and parish in Berthier county, on the St. Lawrence river, close to the western end of Lake St. Peter, and 2½ miles from Berthierville station, on the Canadian Pacific railway, and Sorel, on the opposite bank of the St. Lawrence, in Richelieu county. It contains a Roman Catholic church and 1 store. Population of parish, 875.

St. Ignace de Loyola East is on the St. Lawrence river shore of Ile St. Ignace, some one-quarter mile downstream from the government wharf.

In August, 1911, an agreement was signed beween the Crown and Mr. Eugene Patenaude, of Montreal, by which the latter consented, for the sum of $2,500 to build a close-faced and earth and stonefilled crib jetty, 250 feet long and 18 feet wide at top, over road leading to public wharf. Crib to be of timber 8 by 10 inches spruce or hemlock with cross-ties at every 10 feet and every second tier with middle longitudinal of 12-inch round spruce or hemlock also every second tier. Vertical posts at every inner intersection of cross-ties with face timbers. Jetty side facing the St. Lawrence to be protected with large stones hand laid endwise and sidewise perpendicular to the 45 degree slope.

Work was commenced August 14, and satisfactorily completed September 23 following.

ST. IRENÉE.

St. Irenée is a village situated in the County of Charlevoix, on the north shore of the St. Lawrence, 78 miles below Quebec and some 6 miles west of Murray bay.

During the present fiscal year, during a storm which had raised the water, at high tide, very nearly 2 feet above the floor of the wharf, the movable slip was broken by the heavy sea; the necessary repairs were immediately executed in order not to interfere with traffic on the wharf. Minor repairs were also effected to the flooring of the wharf during the summer season.

The expenditure for the present fiscal year 1911-12, amounts to $211.44.

ST. JEAN. I. O.

St. Jean is situated on the south shore of the Island of Orleans, in the County Montmorency, 18 miles below Quebec.

During the present fiscal year, minor repairs were done to the flooring of the wharf; these repairs were made from May 1 to November, 23, 1911.

The expenditure for the present fiscal year amounts to $281.47.

ST. JEAN DESCHAILLONS.

The expended amount was only $755.75, of which $36 went to pay for placing wharf in order for opening of navigation and removal of shed, fenders, posts, guards, &c., at its close in November; another amount of $120 had to go for repairs on hill approach, between trestle-roadway and track of the Lotbinière and Megantic railway, much damaged by spring freshets and heavy rains; this approach being the only means of communication via government wharf, to the fleet of dredges, tenders, &c., operating in the ship channel at Cap à la Roche, above, off and below the wharf. The remaining $600 or so were expended on new work improving, with a view of decreasing grade on road approach on 350 feet in length of hill between railway track, trestle and side of hill, 1,500 cubic yards of compact brick-clay were excavated and removed.

It is intended in connection with this grading to remove the existing trestle, of 205 feet in length, from the side wharf, to top of retaining wall, ten feet higher up.

Work was started on hill August 22 and closed October 24.

ST. JEANNE DE L'ILE PERROT.

From August 7 to September 13 last, departmental dredge *Challenge* worked in River St. Lawrence opposite parish Church of Ste. Jeanne de l'Ile Perrot. Some 3,142 cubic yards of clay, hardpan and boulders being taken out and dumped ½ mile out.

Width of cuts, 20 to 22 feet; depth, 1 to 3 feet, and distance advanced 1,500 feet.

Object of dredging was to obtain an 8-foot channel 100 feet wide up to site of wharf which the Crown intends building at Ste. Jeanne.

ST. JÉROME.

St. Jérome is a village situated on the south-east shore of Lake St. John, 24 miles east of Roberval, on the line of the Quebec & Lake St. John Railway.

The work done during the fiscal year, consists in the construction of a headblock in an 'L' shape, 42 by 22 by 16, fully ballasted.

Amount expended, $2,247.66.

Work started April 15 and suspended the 26th of the same month; work started again on September 1, 1911, and suspended October 13; on February 23 work was continued and completed on March 30, 1912.

ST. JOSEPH DE LETELLIER.

The village of St. Joseph de Letellier is situated in the bay of Seven Islands on the north shore of the Gulf of St. Lawrence. The population is 500; it has one R. C. church and four stores, besides the Hudson Bay and Revillon's trading posts.

The contract for the construction of the wharf was awarded to N. Warren of Chicoutimi for $18,900.

In 1910, no work was done, but early in the spring of 1911, the work was started. The wharf to be built was to be 424 feet in length, the approach to be 20 feet in width, then 30 feet, with a head-block 40 by 60 feet. The contract plan calls for a wharf composed of six piers 25 feet apart, but that style of construction is not suitable for that locality.

During the fiscal year 1911-12, two piers were sunk; the head-block 40 by 60 feet and pier No. 5, 40 by 30 feet; these two piers are built up to two feet above high water. An accident happened to pier No. 6 after sinking it; a bad storm, lasting two days, passed along the coast, while the crib was partly filled and moved the pier 12 feet out of its original place, toward the shore, everything possible was tried to replace it but without success, finally it was decided to leave it there as the depth of water was the same there as at the original place.

The work was stopped in October, and the piers were well filled with stone up to the top. The contractor was paid for three estimates, which amount to $6,895.79.

Work started June 1; discontinued October 15.

Expenditure for the fiscal year is $7,169.50.

ST. JOSEPH DE SOREL.

St. Jospeh de Sorel, is a post village and parish in Richelieu county, on the South Shore railway and on the Richelieu and St. Lawrence rivers at the southwest end of Lake St. Peter, the port of call for the steamers of the Richelieu and Ontario Navigation Co. The village contains the shops of the Department of Marine and Fisheries for the construction and repairs of government vessels and barges, employing 700 workmen. It contains also a Roman Catholic church, 4 stores, 2 saw and flour mills. Population of parish, 1,400.

The St. Joseph de Sorel public wharf was begun, under contract with Mr. Jos. Cardin of Sorel, at the end of November, 1910, and satisfactorily completed March 31, 1911. Contract price, $9,100.

The structure consists of:—

1. A headblock 72 feet 3 inches by 46 feet 2 inches of a pile substructure up to 2½ feet above zero gauge, and a close-faced crib superstructure the flooring of which stands 13½ feet above low water level, outside face, being in 12 feet of water;

2. A close-faced crib approach from 110 feet 4 inches to 119 feet long and 18 feet wide;

3. A stone approach 74 by 18 feet with sides riprapped and sloped 1 in 1.

The expenditure for the fiscal year 1911-12, is $860.

ST. LAURENT, I. O.

St. Laurent is situated on the south shore of the Island of Orleans in the County of Montmorency, 10 miles below Quebec.

During the present fiscal year, minor repairs were made to the flooring and to the movable slip of the wharf.

The work was started October 3, and completed November 9, 1911.

The expenditure for the present fiscal year 1911-12, amounts to $265.20.

ST. MAJORIQUE.

St. Majorique is a large municipality on the north side of the northwest arm of Gaspé harbour at the mouth of the Dartmouth river where all the traffic over the maritime road terminates for the population along the south shore of the St. Lawrence river and the north shore of the outside of Gaspé bay.

Approaches and roadway to the outlet of the Dartmouth river were started from the St. Majorique side towards the main channel, in September last.

Two hundred and ten feet of embankment, over fascine mattresses, were built to old river bed. Two abutments of 20 by an average of 25 feet built to receive wooden structure of 35 feet span so as to allow continuation of embankment, and 300 feet of embankment was constructed on south side of old channel so as to reach a good foundation to resume work in the spring.

Expenditure, including materials bought for prosecution of work, $4,944.60.

ST. MARC.

St. Marc de Cournoyer, is a post village in Verchères county, on the Richelieu river, 9 miles from Belœil station, on the Grand Trunk railway, and 15 miles from St. Hyacinthe. It contains 1 Roman Catholic church, 3 stores, 1 saw mill, 2 door and chair factories and a telephone office. Population of parish 950. The public wharf at St. Marc, built in 1901-2, consists of:

1. A crib headblock 76½ feet long besides icebreaker, from 18 to 32½ feet wide, standing 18½ feet high in 8½ feet of water at low level;

2. A stone approach 44 by 42 feet with sides riprapped;

3. A storehouse 22 feet 4 inches by 15 feet at downstream shore end of approach.

From October 4 to 28, 1911, and from March 18 to 30, 1912, a sum of $398.37 was expended in strengthening the downstream corner of headblock, including the replacing of steel plates, repairing concrete flooring and sidewalk and painting storehouse.

Work was done by day labour.

ST. MAURICE RIVER.

Important dredging has been executed at the mouth of the St. Maurice, during the past fiscal year, summer of 1911, by the contractor, M. Antoine St. Pierre. These works commenced June 9, and were terminated November 17.

From July 13 to 20, work was stopped by orders but, with this exception, the work has been executed without interruption; 161,120 cubic yards of material were removed:

1. Between Caron island and the saw mill of the Wayagamack Co., dredging has been done on a length of 900 feet by a width of 96 feet and to a depth of 10 feet below low water level;

2. From opposite the sawmill of the Wayagamack Co., down the river, approximately 1,000 feet long by 32 feet wide and 10 feet deep;

3. In the eastern channel from the Union Bag Co.'s wharf, on the east side of St. Christophe island, to Isle de la Poterie (Wayagamack), work has been done on a length of about 1,200 feet by a width of 64 feet and a depth of 10 feet below low water; another cut 830 feet long by 96 feet wide in the space included between the bridge which connects Caron and St. Christophe islands and the preceding work;

4. Lastly, the dredge *St. Pierre* continued the dredging of the eastern channel from the head of Isle de la Poterie (Wayagamack) down to the St. Lawrence river. Work was continued here until ice necessitated the stoppage on November 17, 1911, at which date, there remains some dredging to be done on a length of about 500 feet to reach deep water in the river. The dredging, to a depth of 10 feet, has greatly improved navigation of the eastern channel and will be of great advantage to the exporters of lumber, &c.

Grand Piles and la Tuque.

The dredge *St. Maurice* operated from June 28 to October 6, 1911, at the following places:

1. At Mekanic island, distant 15 miles above St. Jacques des Piles, 5,251 cubic yards of material were removed from the channel at this place, and all this was cast over;

2. At Ile aux Morpions, situated 9 miles above the Piles, 7,221 yards of materials were removed, all this was also cast over;

3. At Traverse Ricard, 6 miles above the Piles, 5,181 yards; at Pointe à Trudel, 2 miles from the Piles, 16,022 yards, and at Pointe Madeleine, 1,294 yards of material have been removed from the channel.

The whole of this making a total of 35,069 yards of material removed by the dredge *St. Maurice* during the summer of 1911.

The stone lifter also worked for about three months, from June 28 to September 29, 1911. Stones were removed from the channel in the Traverse La Tuque, above and in Rapide Croche, at Petite Batiscan, at Grande Anse and in the Manigonce rapid.

The quantity of stone removed from the channel and deposited on the shores of the St. Maurice represents about 3,620 cubic feet.

ST. PAUL DE JOLIETTE OR D'INDUSTRIE AT PONT RIELLE.

St. Paul D'Industrie is a post village in Joliette county, on L'Assomption river and a station called Crabtree mills, on the Canadian Northern Quebec railway, 5 miles from Joliette; it contains 1 Roman Catholic church, 4 stores, 1 hotel, saw and flour mills, and 1 factory for making tubs and window sashes. At Lavaltrie station it has express and telegraph facilities. Population of parish, 800.

The ice-pier at Pont Rielle, built under contract with Mr. Jos. Renaud in the autumn of 1910, consists of:—

1. A substructure of 35 spruce piles driven into the ground from 15 to 20 feet and razed to 1 foot below river bed;

2. A reinforced concrete superstructure 37 feet 7 inches extreme length and 8 feet 11 inches extreme breadth at bottom, 22 by 6 feet 7 inches at top, 28 feet high with upstream face nosed 90 degrees and inclined 1 in 1, all other faces being sloped 1 in 24.

From March 2 to 26 inclusive, a sum of $165.75 was incurred in placing some stone riprap all round pier so as to prevent undermining.

The work was done by day labour.

ST. PAUL DE L'ILE AUX NOIX (ST. VALENTIN).

Isle aux Noix, is a village in St. John county, on the Richelieu river, 2 miles from Stottsville station, on the Grand Trunk railway, 12 miles from St. Johns; it has 1 Roman Catholic church, 2 stores, 2 hotels and 1 linen factory, with express and telegraph office at Stottsville. Population, 600.

The public wharf at St. Paul de l'Ile aux Noix, built in 1897-98, consists of:—

1. A crib headblock 61 by 22 feet, standing 17 feet high in 9½ feet of water at low level;

2. A trestle approach 159½ by 20 feet with guard railing on both sides;

3. A stone and earth approach 90 feet 5 inches by 20 feet wide, sides and outer end slope 1 in 1;

4. A 30-foot right-of-way 1,676 feet long (including double culvert 46 feet long and 16 wide) leading to public road;

5. A storehouse 16 by 20 feet at downstream end of headblock, with derrick to facilitate freight handling.

From July 7 to September 10, 1911, and from March 5 to 30, 1912, extensive repairs were made to wharf: Flooring of headblock doubled with 2-inch oak planks, two rows of oak waling was placed along front face, pile approach levelled off and strengthened, and part of flooring and stringers renewed, stringers and flooring of culvert replaced, stone approach regravelled, and shed and railing painted.

The work was done by day labour.

ST.PETER'S CHANNEL.

St. Peters channel lies between Ile Bouchard and Ile Ste. Marie situated in the St. Lawrence between St. Sulpice and Verchéres.

From September 4 to 25 last, L. Cohen & Son's dredge *Lanark* worked at the Vercheres end of St. Peter's channel, taking out some 4,908 cubic yards of clay and sand in the making of an 8-foot channel 50 feet wide and 915 feet extreme length. Width of cuts 20 to 30 feet, average depth 2 to 9 feet, and distance advanced 1,414 feet. Dumping grounds ½ mile distant. Contract price 25 cents a cubic yard.

The object of this dredging is to shorten the navigable distance between Verchères and St. Sulpice, also to permit the farmers on the Verchéres island to load hay and other farm produce.

ST. SIMÉON.

St. Siméon is situated on the north shore of the River St. Lawrence, in the County of Charlevoix, 107 miles below Quebec.

Last winter, all the necessary materials were purchased and the work of placing a hardwood sheathing around the headblock will be executed during the next summer season.

Minor repairs were made to the flooring and movable slip of the wharf. The repairs were done from the 22nd to the 25th of July, 1911.

The expenditure for the present fiscal year 1911-12, for repairs done and for the purchase of materials for work to be done amounts to $2,117.78.

ST. VALIER.

The village of St. Valier, in the County of Bellechasse, is on the south shore of the St. Lawrence, 21 miles below Quebec.

To help the trade and provide facilities for landing shipments of farm produce, in permitting the coasting steamer *Champion* to call there, the necessary amount was appropriated by parliament for the construction of a landing-pier at St. Valier. The work was built during the summer of 1908; it consists of a stone approach 27·5 feet, together with a timber crib-work close-faced and filled with stone ballast, of 272·5 feet in length, with a batter of 1 in 12, by a width of 22 feet and a height of 21 feet at the outer end.

Lately, it was found expedient, in order to accommodate the coasting steamer *Champion* and allow her to stop on scheduled time, to extend this wharf a length of 300 feet.

On January 13, 1912, a contract was entered into for the construction of that addition, the contract price being $11,550.

At the close of the last fiscal year, the work was not yet commenced.

SABREVOIS.

Sabrevois is a post village in Iberville county, on the Richelieu river, and a station on the Quebec, Montreal and Southern and Rutland railways, 7 miles from Iberville and St. Jean. It has 2 churches (Roman Catholic and Episcopal), 2 stores, 1 hotel, boys' college and ladies' school, 1 lumber and saw-mill, 2 butter and two cheese factories, besides express, telegraph and telephone offices. Population about 400.

The Sabrevois public wharf, built in 1900, consists of:—

1. A pile headblock, 105 by 24 feet 3 inches, including crib ice-breaker;
2. A trestle approach, 160 feet 4 inches by 30 feet;
3. A stone embankment, 546 by 30 feet with slopes of 1 in 1 on both sides.
4. A right-of-way, 1,048 by 30 feet, leading to King's highway;
5. A shed, 30 feet 4 inches by 23 feet, on piles at downstream intersection of headblock, and an approach and another shed, 30 feet 6 inches by 24 feet 5 inches, on crib near upstream intersection of head-block and approach.

From October 2 to 26, 1911, and from March 6 to 30, 1912, extensive repairs were made to wharf: cap, corbels and stringers of two-thirds of head-block and the pine flooring were renewed, ice-breaker strengthened, storehouse painted and stone approach improved.

Work was done by day labour.

The expenditure for the fiscal year, 1911-12, is $1,279.81.

SAGUENAY RIVER.

Dredging.

For description of Saguenay river, refer to Report of Public Works, 1910-11, Part IV, page 179.

The work done, during the last fiscal year, was the continuation of improving the channel. The dredging was done at three places:

1. At the intersection of Ste. Anne and Chicoutimi ranges, where some 56,519 cubic yards of class 'C' material and 121¾ cubic yards of class 'A' material were dredged. This work is not yet completed.

2. At the point below the intersection of Ste. Anne and Caribou ranges, where some 80,066 cubic yards of class 'C' material and 20 cubic yards of class 'A' material were dredged. This place is supposed to be completed.

3. One cut was made in Chicoutimi range, where some 41,883 cubic yards were dredged.

Total, 178,487 cubic yards of class 'C' material; work was started on May 24 and stopped November 15.

The dredging was done under contract by the Continental Dredging Company of Montreal with the spoon dredge *Algonquin*.

SEVEN ISLANDS (CLARK CITY).

The village of Clark City is situated on the north shore, about 300 miles east of Quebec; it has a population of about 500 inhabitants, all working at the pulp-mill, which has a capacity of about 150 tons of pulp per 24 hours; its wharf is situated in the bay, 9 miles from the village, which is connected to the wharf by a railway.

There was $15,000 voted at the last session to raise the present wharf, but orders were received not to spend any money on this work, so nothing was done.

SHIGAWAKE.

Shigawake, on the north shore of Baie des Chaleurs, in Bonaventure county, is a post village, about 2 miles east of St. Godfroy.

The total length of the wharf built there is 490 feet: 150 feet long by 20 feet wide and 340 feet long by 24 feet wide. The height of the said wharf is 19 feet at the outer end with 5 feet of water at low water spring tide.

During the fiscal year 1911-12, the contract awarded to Mr. T. P. Charleson, in 1910-11, was completed. Repairs were also done to the old portion of the wharf.

Total amount expended, $8,467.84.

SOREL.

Sorel, is an incorporated city, capital of Richelieu county and district, on the right bank of the River Richelieu, at the mouth of Lake St. Peter, on the Quebec, Montreal and Southern railway, 52 miles north-east of Montreal, 33 miles from St. Hilaire. Sorel contains water, electric and gasworks, a court of justice, a prison, a fine market, manufactories of engines, boilers, mill machinery, saw, stoves, ploughs, agricultural implements, grates for steam boilers, doors, sashes, leather, bricks, 3 printing offices, English and French newspapers, 3 branch banks, 12 hotels, Roman Catholic and Anglican churches, 1 fine Roman Catholic college, a Protestant elementary school, a convent, a hospital, an orphanage, telegraph, telephone and express offices, and about 50 stores. Population, 9,000.

Breakwater.

The breakwater, begun under contract with Mr. D. G. Stewart in August, 1910, opposite Elizabeth street and immediately down-stream of Government high level wharves, is a structure 500 feet long with an outer 14 feet wing, standing 12 feet above zero gauge and composed of two rows of piles 6 feet distant, centre to centre, with stone filling between and connecting rods and fenders; piles of same row being 2 feet distant centre to centre.

Contract price, $6,350.

Work was completed at the end of March, 1911, but final balance of $1,369.60 was paid to contractor only in June following.

Wharf.

Work on the contract, entered into in 1907, between the Crown and Mr. J. E. Beauchemin, of Sorel, for the building of cribs in front of trestle wharf built in

1901-05, was continued in 1911-12. Contract, including extra consented to later, called for:—

1. The construction of six close-faced cribs of a total length of 687½ feet, from 18 to 40 feet wide at bottom, from 15 to 18 feet wide at top, standing 41 feet high in 25 feet of water at lowest level and resting on a foundation of 1,374 piles razed to ground level;

2. Dredging to 25 feet below E.L.W.L. of a seat for the above;

3. Placing 1,116 cubic yards of stone to form revetment at northeast end of old structure in the St. Lawrence.

At the end of March, 1912, all was completed but the layer of macadam to be placed on top of earth filling. Last estimate, made March 31, 1912, certified to $162,646.92 of work done.

Ice pier.

The government ice pier in the Richelieu river above Sorel Q.M. & S.RR. bridge and opposite the Sheppard mill is a close-faced and stone-filled crib 30 by 25 feet from bottom up to 10 feet above low water level, 10 feet 2 inches by 21 feet 11 inches at top with upstream face inclined 1½ in 1. It stands 20 feet above zero gauge.

The reconstruction of the above water portion of this pier, begun in October, 1910, was completed January following.

STRATFORD CENTRE (LAKE AYLMER).

Stratford Centre is a post village in Wolfe county, on the Maskinonge river, 6½ miles from Garthby station, on the Quebec Central railway, with port on Lake Aylmer. It is 11 miles from Lake Weedon, and 14 miles from D'Israeli. It has 1 Roman Catholic church, 5 stores, 1 hotel and 5 saw mills. Population, 1,151.

The Stratford Centre wharf, begun under contract with Messrs. McLaughlin Bros., in February, 1911, was completed on October 12 following. It consists of:—

1. A close-faced crib headblock 40 by 40 feet standing 10½ feet high in 4½ feet of water at ordinary low level;

2. A crib and span approach, 308 feet long and 16 feet wide, composed of 11 close-faced and stone filled crib piers 8 by 16 feet, spans being 20 feet long;

3. A stone approach 194 feet long, 18 feet wide at top, with sides riprapped and sloped 1 in 1.

The expenditure during the fiscal year 1911-12 was $3,060.

TADOUSAC.

Tadousac harbour is on the eastern side of the Saguenay and a mile within Pointe aux Vaches. It is a bay between Rouge and Ilot points with a sandy beach at its head, and rather more than half a mile wide and a third of a mile deep.

On July 18, 1910, a contract was awarded for the construction of a wharf for the amount of $31,795.

During the last fiscal year, the work was continued; the 81-foot pier, sunk in the previous year, was built up and ballasted to its proper level; the crib-work from the pier on the north and west sides, commenced in the year before, was about completed.

The head block 73·8 by 35·3, top measurement, was built up and ballast and flooring is temporarily laid. There remains, the cap piece and moving slip to be built. The earth filling was continued and almost completed.

Work started on April 15, 1911, and suspended about the middle of January, 1912.

Amount expended about $14,606.50.

THREE RIVERS.

The city of Three Rivers is situated in the County of St. Maurice, on the northern bank of the St. Lawrence river, at the mouth of the River St. Maurice, 82 miles below Montreal, and 78 miles above Quebec. Population, 14,500.

On May 18, 1910, a contract was entered into with Messrs. J. J. Collins and V. W. Giroux for the construction of a section of a timber dock and ice-breaker in the western part of the harbour, at the wind-mill. Under this contract, the work to be done consisted in the construction of a timber dock, 500 feet long; in the construction of an ice-breaker, 115 feet long; in an embankment, 100 feet wide on top, at the back of the timber dock and of the ice-breaker and from the ice-breaker to the high water line, and in a stone rip-rap protection on the western side of the embankment for a distance of 400 feet from the ice-breaker.

During the fiscal year 1911-12, it was decided to continue the timber dock with a crib-work extension 140 feet long, to fill the area between the embankment and the high water line for a width of 365 feet by an average length of 670 feet, and to build a track embankment, 1,000 feet long, 20 feet wide on top with slopes of 2 in 1 on each side and a stone riprapped on the east side.

Regarding the work under contract of May 18, 1910, during fiscal year 1910-11, the ice-breaker was built and sunk to a height of 4 feet above low water; 25 per cent of the earth filling and 65 per cent of the stone riprap on the west side of the embankment were done.

During fiscal year 1911-12, the five cribs of the timber dock, of respective lengths of 96, 104, 96, 96 and 113 feet were built and sunk in place to an average elevation of four feet above low water, and partly filled with stone; the superstructure of the ice-breaker and of part of crib No. 1 were mostly completed; 59 piles were driven for the coal towers tracks; 12 per cent of the earth filling and 5 per cent of the stone riprap were done. Most of the timber and iron required to complete this work has been received.

During 1911-12, the construction of crib-work extension, 140 feet long, and of the stone riprap on the east side of the track embankment has been authorized, and tenders have been called for the additional filling and track embankment.

Expenditure for the fiscal year is $72,778.22.

VAL DES BOIS.

Val des Bois is a village in Labelle county, 29 miles above Buckingham and near the foot of navigation on the second reach (18 miles long) of the Lièvre river.

A landing float 25 by 30 feet, formed of three tiers of cedar timbers and finished with freight-shed, 12 by 16 feet, mooring hooks, chains, &c., was built at this place July 5 to 31.

Expenditure to March 31, 1912, is $380.46.

VAUDREUIL.

Vaudreuil, a post village and parish in Vaudreuil county, on the Ottawa river, with port on the Lake of Two Mountains and on the Canadian Pacific railway and Grand Trunk railway, 24½ miles from Montreal. It contains 1 Roman Catholic church, 6 stores, 4 hotels, 4 butter factories, &c., besides telephone, telegraph and express offices. Population of parish, 1,510.

From July 24 to August 1, departmental dredge *Challenge* worked at Vaudreuil, enlarging and deepening to a depth of 8 feet basin adjoining Government wharf.

Some 2,108 cubic yards of blue clay were removed 3 miles away. Width of cuts, 14 to 22 feet; depth, 9 feet, and distance advanced 329 feet.

The object of dredging being to offer easier access to wharf.

VERCHÈRES.

Verchères, a post village in Verchères county, on the St. Lawrence river and on the Quebec, Montreal & Southern railway, 21 miles from Montreal. It contains 1 Roman Catholic church, 1 hotel, 2 saw miles, 2 wood and iron factories, 1 branch bank (Provincial Bank of Canada), 1 college, 1 convent, 5 flat boat manufactories, 12 stores, also telegraph and express offices. Population, 750.

The Verchéres public wharf, built in 1903-05, consists of:

1. A pile headblock 97½ by 41 feet exclusive of ice-breaker inclined 1½ in 1, and standing 21 feet 5 inches high in 9 feet 5 inches of water at low level;

2. A pile approach 224 by 20 feet with ice-breaker all along;

3. A stone approach 133 by 20 feet with sides rip-rapped and sloped 1 in 1.

From August 22 to September 22, 1911, the most urgent repairs were made to flooring at a cost of $152.19.

During December, 1911, a further expenditure of $278.56 was incurred in strengthening ice-breaker by the addition of stone, &c., and in minor repairs. Total expenditure during fiscal year, $430.75.

Work was done by day labour.

VERDUN.

Verdun is an incorporated village in Jacques-Cartier county, lying to the south-west of the city of Montreal, and separated from it by the tail-race of the Montreal waterworks, and 1 mile from St. Paul station, on the Grand Trunk Railway. It contains 4 churches (Roman Catholic, Anglican, Presbyterian and Methodist), a number of stores, a large laundry, ice house, 1 hotel, the Protestant hospital for the insane, 1 branch bank and a large seminary. A ferry runs to La Tortue on the south side of the St. Lawrence and there is a good electric car service to Montreal. Population, 12,000.

The Verdun public wharf, built in 1899-1900, consists of:

1. A close-faced crib headblock 82 by 20 feet standing 11 feet 8 inches in 8 feet of water at low level;

2. A close-faced crib approach 75 by 18 feet.

During November, 1911, Mr. Narcisse Paul was given a small contract, $150, for the replacing of 2 pieces of 12 by 12-inch face timbers; rip-rapping downstream side of approach with 10 toises of large stones, and in improving roadway by the addition of some 20 cubic yards of gravel and broken stone.

Dredging.

From May 22 to July 11 last, Messrs. Laurin & Leitch's dredge *No. 4* worked at Verdun:

1. Opposite Government wharf, widening and deepening to 8 feet, adjoining basin.

2. Widening and deepening also to 8 feet and some 6,700 feet upstream to wharf, channel leading to Cote Ste. Catherine or La Tortue on the opposite side of the St. Lawrence.

Total quantity, 11,212 cubic yards of hardpan and boulders dumped from ¼ to ½ mile out. Width of cuts, 20 to 30 feet; depth, 2½ to 7 feet, and distance advanced 1,876 feet. Contract price, 41 cents a cubic yard.

Ferry steamboat plies, many times daily, between Cote Ste. Catherine and Verdun.

VILLE-MARIE.

The departmental dredge *Queen* worked at Ville-Marie, to widen channel and remove ridges which had been left in previous dredging operations (May 22-September 13), making six cuts: 418 feet, 338 feet, 1,085 feet, 1,508 feet, 199 feet and 243 feet long, 18 feet wide, to a grade depth of 10 feet.

12,690 yards, (scow measure) of clay was removed and spoiled in deep water, 1½ miles from dock.

WOBURN.

Woburn is a post village in Beauce county, on the Arnold river, 18 miles from Megantic station, on the C. P. Ry. and Quebec Central Ry., with port on Lake Megantic. It has 1 French Roman Catholic church, 3 stores and 2 saw mills. Population about 450.

The public wharf of Woburn, built between 1882 and 1887, is situated at the southern end of Lake Megantic in the County of Compton.

The structure consists of:—

1. A close-faced headblock 61 feet 6 inches, 30 feet 7 inches and standing 13 feet 1 inch high in 8 feet of water at low level;

2. A crib earth and stone filled approach 184 feet long and 15 feet wide extending to public road;

3. A freight-shed 10 feet 8 inches by 15 feet 5 inches on headblock with extended roof 30 by 20 feet and a storehouse 35 feet 5 inches by 18 feet, on shore.

On May 10, 1910, and June 12, 1911, a sum of $15 was expended in repairs to approach.

WOODLANDS.

Woodlands, a post village in Chateauguay county, and a station on the St. Lawrence and Adirondack Ry., 2 miles from Chateauguay.

From September 16 to October 20, departmental dredge *Challenge* started the making of a 10 foot channel, 75 feet wide, through shoal in Lake St. Louis opposite Woodlands, extending all along from Beauharnois to River Chateauguay, 8 miles down stream.

A cut 600 feet long was made, starting 3,650 feet from the old Durocher wharf. Material removed: 6,946 cubic yards of sand and loam; widths of cuts 22 to 24 feet; depth 2½ to 6 feet, and distance advanced 1,649 feet. Dumping grounds ½ mile distant.

The object of this dredging is to facilitate access to new government wharf 1½ mile upstream at Bellevue or Boisbriand.

YAMACHICHE RIVER.

The Yamachiche river is situated on the north side of the St. Lawrence river. It takes its source in the Laurentide mountains, flows through the County of St. Maurice, and empties into lake St. Peter, at a distance of about 16 miles above Three Rivers, 94 miles above Quebec, and 66 miles below Montreal.

The river is navigable at the outlet for a distance of 1½ miles to the village of Yamachiche, during spring high water.

Population of the village is 967; of the parish, 1,845.

Exports consists in hay, &c.; imports in coal and general cargo.

During summer, 1911, from May 22 to July 18, dredging was done in the entrance of the river by the departmental dredge *No. 3*. Thirteen thousand six hundred and thirty-two (13,632) cubic yards, scow measurement, of clay and sand were dredged over a distance of 1,000 feet long with a width of 35 feet and to a depth of 6 feet at low water.

PROVINCE OF ONTARIO.

BARRIE.

Barrie, County of Simcoe, 66 miles northwest of Toronto, is situated on Kempenfeldt bay, an arm of Lake Simcoe. Population, 6,000. It is an important divisional point on the Grand Trunk railway, and is the county town. It is a beautiful residential town, much patronized by tourists, and is in the centre of a noted agricultural and dairying district.

On December 13 last, authority was given to expend the sum of $900 in repairs to the Bayfield street wharf by day labour.

Work was carried on from December 21, 1911, to March 28, 1912, intermittently, as the weather permitted.

The work consisted in the replacing of the plank decking, where necessary, over the entire top of the wharf which is 215 feet long by 36 feet wide, also the renewing of all the deck capping, and repairing and renewing all the waling.

Total expenditure for fiscal year 1911-12, $892.92.

BATH.

Bath, County of Lennox and Addington, is situated on the north shore of the Bay of Quinte, 4 miles from Ernestown, the nearest railway station, and is a busy, prosperous place. The freight, by water, amounts to over 1,000 tons per season, also 1,000 tons of coal from Oswego. A number of vessels call regularly at this port. Population, 450.

On September 21 last, authority was given for the removal of 1,200 cubic yards of sand and boulders; the expenditure to be strictly limited to $469.

Arrangements were made with the R. Weddell Co. to do this work, after they finished work at Port Hope, but the dredge was unable to finish at Port Hope in time to reach this place before the close of the season.

There has been no expenditure.

BAYFIELD.

Bayfield is a village, situated on the east shore of Lake Huron, in the County of Huron, at the mouth of the Bayfield river, 12 miles south of the town of Goderich. Population about 600. There is a saw-mill and a flour-mill at this point. It is a harbour of refuge for light draught vessels, drawing not more than 10 feet of water.

During the past fiscal year, a sum of $3,800 was voted for repairs and renewals to piers. On April 13, 1911, authority was received to expend $500, which amount was supplemented with $1,083 on August 5 last, and $2,217 on December 21 last.

Operations were commenced on April 26 and continued until May 20, 1911, when, owing to grant being expended, work was suspended. Operations were resumed on August 11, and continued until October 23 following, when work was again suspended, owing to the amount of seven-twelfths of the entire vote authorized to date, being exhausted. Work was again resumed on February 19, 1912, and continued until the end of the past fiscal year.

The work performed consisted of the protection of the inner or channel face of the outer 437 feet of north pier, with 4-inch beach sheeting; the renewal of 180 feet of the decking, together with other sundry repairs to face timbers and decking of this pier. 383 lineal feet of the south face of south pier were sheeted with 4-inch beech, while the decking of about one-half of this pier was entirely renewed.

In the execution of this work, some 93,550 feet B.M. of beech, cedar and hemlock timber, and 5,200 lbs. of iron were used.

The work performed left these piers in fair condition only as, unfortunately, the time available was not sufficient to permit spending all of the grant, and in addition a large portion of the face timbers require renewal or protection by sheeting, while additional decking requires attention.

During the fiscal year of 1911-12, the total expenditure at this place was $3,584.42.

BAYSVILLE.

Baysville, District of Muskoka, is a small village of 200 inhabitants, situated on the south branch of the Muskoka river, distant 16 miles east of Bracebridge, the nearest railway station.

On March 19, 1912, authority was given to expend the sum of $400 for wharf improvements at this place by day labour.

Work was carried on from March 27 to 30.

The work consists in the construction of a shelter and warehouse combined, the shelter being 16 by 40 feet, and the warehouse 14 by 11 feet 9 inches high.

In doing the above work, some 5,000 cedar shingles, 3,000 pine shingles, 3,000 f. B.M. pine and hemlock, 68 lbs. bolts, 68 lbs. nails, and 19 galls. paint and oil were used.

Total expenditure for fiscal year, 1911-12, is $205.45.

BEAUMARIS.

Beaumaris, District of Muskoka, is a summering place with a population of about 1,000, situated on Tondren island, Lake Muskoka, about 13 miles from Gravenhurst. It is the central distributing point for the Muskoka lakes. From 18 to 20 boats call at this port daily during the season.

On June 16 last, authority was given to expend the sum of $20,000 in the construction of a wharf, for which a contract was awarded to the Union Construction Co., of Ottawa, for the sum of $23,994 on September 12, 1911.

Work was commenced January 22 last, and is still in progress.

Up to date, the work done consists in the building of a stone approach to the wharf 82 feet long by 20 feet wide, and the building, sinking and filling with stone of a crib 90 feet long and 20 feet wide, also a crib 50 feet long by 20 feet wide to a height of six courses; the driving of foundation piles on which to place the outer crib, and the placing of a considerable quantity of stone adjacent to the work to be used for crib filling.

On February 2 last, authority was given to provide a small boat landing for this wharf, and the contractor offers to do this work for the sum of $200.

On March 8, 1912, authority was given to expend the sum of $300 for certain alterations in the manner of placing of the caps, which involved additional labour.

Total expenditure for fiscal year, 1911-12, is $3,951.34.

BESSERER'S GROVE.

Besserer's Grove, Russel county, population of district, say, 1,000, is situated on the Ottawa river, 10 miles below Ottawa.

At its last session, parliament granted the sum of $7,500 towards the construction of a crib-work wharf. Plans and specifications have been prepared and tneders called but contract has not yet been awarded.

The expenditure for the fiscal year, 1911-12, is $316.54, including $193.28 for dredging.

Dredging.

The departmental dredge *Nipissing* worked at landing-pier of the Hiawatha Park Co.'s wharf (July 12-19), making one cut on each side of the pier, 300 feet long each, to a grade depth of 10 feet, to facilitate the approach of boats to the wharf.

3,042 yards (scow measurement) clay, was removed and spoiled in deep water, ¾ mile downstream.

BIG ISLAND.

Big Island, Prince Edward county, is located in the Bay of Quinté, opposite the township of Sophiasburg, of which it forms part, and it is a thriving, prosperous agricultural district; it is 6 miles from Belleville and 14 miles from Picton. Population about 200.

On June 15 last, also on August 11 last, authority was given to perform certain dredging, for which a contract was awarded to Messrs. R. Weddell & Co., at $4,50 per cubic yard, in situ for rock.

Work was carried on from July 25 to August 16.

The work consisted in drilling, blasting and dredging an area 100 feet wide by 150 feet long in front of the wharf, also dredging two approaches, 75 feet wide each, and approximately 260 feet in length.

In doing the above work, some 4,725 cubic yards of shale rock were removed.

Total expenditure for fiscal year, 1911-12, is $21,310.50.

BRITANNIA.

The departmental dredge *Deschênes* worked at Britannia, on Lake Deschênes (May 29-July 8), around the north-east corner of the landing pier, and making a basin 200 by 92 feet for the harbouring of small craft in stormy weather.

3,856 yards sand (scow measure) was removed to a depth of 9 feet at outer end of pier and to a depth of 4 feet in the basin, and spoiled in 20 feet of water at head of the Deschênes rapids, one-half mile from landing pier.

BRONTE.

Bronte, Halton county, on the north shore of Lake Ontario, 27 miles south-west of Toronto. Population, 350.

On June 2 last, authority was given to have the departmental dredge *Sir Richard* remove 7,000 cubic yards, in situ, at this place.

Work was commenced July 24, and completed August 4, and consisted in dredging between the piers and in the approaches to a depth of 14 feet below zero and, in so doing, some 7,290 cubic yards were removed.

On August 5 last, authority was given to make repairs to the wharf and approach by day labour.

Work was carried on from August 22 to September 18.

The work consisted in planking 200 feet of the east pier, also placing ties in 100 feet of the west pier and in planking 150 feet of the west pier with the good portions of the planking removed from the east pier.

Total expenditure for fiscal year 1911-12, $659.92 for repairs, and $596.93 for dredging.

BURK'S FALLS.

Burk's Falls, District of Parry Sound, is a village of 700 inhabitants, situated on the Magnetawan river. It is a station on the Grand Trunk Railway, 56 miles south of North bay.

On July 20 last, authority was given to expend the sum of $200 in repairs to the decking of the government wharf by day labour.

Work was carried on from August 19 to 25, and consisted in renewing the decking where most urgently required.

In doing the above work, some 9,000 feet B.M. tamarac planking and 433 lbs. iron were used.

Total expenditure for fiscal year 1911-12, is $214.17.

BURLINGTON CHANNEL.

Burlington channel, Wentworth county, is simply a cut through a piece of low-lying land which separates Lake Ontario from a large sheet of water that is called Burlington bay, thereby enabling vessels to reach the wharfs at the city of Hamilton. Over this cut, there is a swing bridge. The cut is 120 feet in width and on the northerly side has a crib-work pier 2,326 feet in length and on the southerly side a pier 2,722 feet in length, of which 2,210 feet is composed entirely of crib and pilework, and the remaining portion, 512 feet, has a substructure of crib-work and pilework and a concrete superstructure having a width of from 40 feet at the outer end to 23 feet adjoining the crib-work portion. The Department of Marine and Fisheries have erected a lighthouse on the east or lake end of this pier.

On May 13 last, authority was given to perform certain dredging by the departmental dredge *Sir Richard* at this place.

The dredge worked from July 3 to 14 and removed 3,870 cubic yards, scow measurement.

The work done consisted in dredging between the piers at the easterly entrance and in the approaches thereto from the lake to a depth of 20 feet below zero.

On May 30 last, authority was given to prepare contract plans and specifications for the widening and deepening of the channel, for which the sum of $100,000 was authorized.

Contract plans and specifications are in course of preparation. The proposed new channel shall have a width of 320 feet and a depth of 25 feet below zero of gauge.

On August 5 last, authority was given for the renewal of a further portion of the south pier at this place by day labour, but the work was not proceeded with.

On August 18 last, authority was given to place a life chain along the face of the south pier; this work was completed at a cost of $129.50.

On August 19 last, authority was given to have the Dominion Bridge Company install certain new parts in the machinery of the swing bridge at a cost of $1,450, the work to be done during the winter season so as not to interfere with traffic.

Work was commenced February 13, and is practically completed.

Total expenditure for fiscal year 1911-12, is $6,957.15.

BYNG INLET.

Byng Inlet, Parry Sound district, is situated on the Magnetawan river, about 3 miles from the Georgian bay, and is a village of some 1,500 inhabitants. Large lumber mills are located at this place, with an annual output of 56 million feet. The coal docks of the C.P.Ry. are also located at this place and handle 250,000 tons of coal.

On June 13, 1910, a contract was awarded to Messrs. Manley & Co., to perform certain dredging at the following prices per cubic yard, scow measurement, 'A' $3.75, 'B' $1.75, 'C' 9½ cents.

Work this season was resumed on May 8 and carried on till June 10, when their contract was completed by the removal of 88,912 cubic yards of 'other materials.'

The above work being insufficient for the requirements of the place it was found necessary to send the departmental dredge *Industry* to do the additional work.

The dredge arrived at the site of the work on October 2 last, and remained there until November 11, when she left for winter quarters.

The work consisted in the removal of a number of shoals from between the Georgian bay and the coal docks of the C. P. Ry., to a depth of 20 feet.

On October 26 last, authority was given to have the *Industry* remove some 17,000 cubic yards of materials at the lumber wharfs of the Graves, Bigwood Co. This work was duly performed and consisted in making two cuts 80 feet wide to a depth of 20 feet in front of the company's wharfs.

The departmental dredge removed 58,012 cubic yards.

On February 17 last, authority was given to have the C. S. Boone Co. perform certain dredging, for which a contract had been awarded them at the following rates per cubic yard, scow measurement, 'A' $5.49, 'B' 25c. Said work to be completed by July 1 next.

This work will be commenced immediately on the opening of navigation.

On December 6 last, authority was given for the removal of a certain shoal, 70 feet north of the red buoy off the red derrick, provided same is located in the proposed channel 100 feet in width.

Up to date, this work has not been performed, but will be attended to when work commences in the spring.

Total expenditure for fiscal year 1911-12, is $14,116.08.

CACHE BAY.

The departmental dredge *Mattawa* worked at the entrance of Cache bay (May 15-August 1), making a channel consisting of two cuts 4,058 and 2,791 lineal feet respectively, 30 feet wide, to a grade depth of 9 feet, in connection with the proposed new dock at this place.

40,245 yards sand and clay was removed and spoiled in deep water, one mile distant from the entrance of bay.

CHENAL ECARTÉ RIVER.

The dredging done consisted in widening and deepening of channel in the Chenal Ecarté river at Johnston's bend and Buldoon's bend and in dredging a channel at the mouth of the river on lake St. Clair.

The government dredge *Ontario* was employed on this work from April 28, 1911, until November 25, 1911, and in that time removed 57,100 cubic yards, scow measurement, of sand, clay and silt. Of this amount 41,000 cubic yards were removed from the river at the bends named, the remainder, viz.:—16,000 cubic yards being removed at the mouth of the river. The depth dredged, at the bends referred to, was 19 feet, and at the mouth of river 10 feet, below L.W.L.

CLAIRMONT FERRY.

Clairmont ferry, South Nation river, Russell county, is situated 8 miles below Casselman. A landslide occurred at the latter place in 1910. 50% of the obstruction in the river was removed in 1910, and owing to lack of funds in 1911, only a part of the remainder was cleared. Work was done August 30 to September 11, and October 5 to 11, which consisted in enlarging the channel at low water, so that boats can get

through easily, and to give a better section for flood discharge to that portion of the river.

xpenditure to March 31, 1912, is $1,268.28.

COBOURG.

Cobourg, Northumberland county, is a large town on the north shore of lake Ontario, on the main line of the G. T. Ry., 68 miles east of Toronto. Population, 5,000. The large ferry *Ontario No. 1* plies between this port and Charlotte, N.Y., the year round, bring to Canada immense quantities of coal for the G. T. Ry.; she also carries a large number of passengers. Cobourg is also a port of call for the regular passenger boats plying between Toronto and Montreal.

On August 5 last, authority was given to expend $2,500 in repairing and reconstructing the east pier at the north end, but this work has not been proceeded with.

On November 23 last, authority was given to perform certain dredging, the work to be performed by the R. Weddell Co., at 50 cent per cubic yard, scow measurement; work was carried on from November 25 till December 9.

The work consisted in dredging a channel through a bar which had formed across the channel to the harbour, with dimensions of 400 by 100 feet. The material excavated was sand. It was dredged to a depth of 20 feet.

In doing the above work, some 6,000 cubic yards were removed.

Total expenditure for fiscal year, 1911-12, is $3,647.88.

COLBORNE.

Colborne, Northumberland county, is situated on the north shore of Lake Ontario, about 14 miles east of Cobourg. Population, 1,000.

During an examination of certain works on Lake Ontario, it was found that certain slight repairs were urgently required in the way of levelling up the decking and replacing a few of the face timbers and part of the decking, and the required repairs were made.

Total expenditure for fiscal year, 1911-12, is $17.

COLCHESTER.

Colchester is a village, situate on the north shore of Lake Erie, in the County of Essex, about 4 miles south of Harrow, and about 14 miles from the Detroit river; it is also about 3 miles from Oxley, a favourite summer resort; Harrow is the nearest point with railway connection. Population about 200.

On October 29, 1910, a contract was awarded to Messrs. Michael, Patrick & Matthew J. O'Leary, of Ottawa, for an extension 300 feet long to the existing landing pier, said extension to be composed of close-faced timber substructure filled with stone ballast, with superstructure of concrete side walls and stone filling between. The amount of the contract is $14,500.

Active operations were started on June 14, 1911, and continued until December 21, when work closed down for the winter. During that time, 5 cribs, with a total length of 300 feet were constructed, placed and filled with stone; 157 footing blocks were constructed and placed and concrete side walls constructed for a distance of 125 feet. Owing to adverse weather conditions, the progress anticipated was not made with this work, and in consequence it is not completed within the time limit imposed by the contract. An extension of time is being arranged for, and work will be completed during the coming season.

Total expenditure during the fiscal year 1911-12, including inspection, is $10,-024.49.

COLDWATER.

Coldwater, Simcoe county, is located on the Coldwater river, about 5 miles from Georgian bay. It is 5 miles from Waubaushene and 17 miles from Midland, and is a station on the Canadian Pacific railway, and the Grand Trunk railway.

On September 2 last authority was given to expend the sum of $1,081 in the construction of a wharf by day labour.

Work was carried on from August 28 to October 25, and consisted in the construction of a pile wharf 72 feet long by 12 feet wide, filled in at the rear thereof. The depth of water at the outside of the wharf is about 10 feet.

In doing the above work, some 27 cedar piles, 840 lbs. iron, and 7,008 feet B.M. planking were used.

Total expenditure for fiscal year, 1911-12, $760.04.

COLLINS INLET.

Collins inlet, District of Nipissing, is the narrows between Philip Edward island and the mainland along the north shore of Georgian bay, 16 miles west of Killarney and 4 miles east of Beaverstone. Large lumber mills are located at this place and cut, annually, 5 million feet, valued at $120,000.

On April 8 last, authority was given to have the departmental dredge *Industry* remove 100,000 cubic yards to improve the channel to the lumber wharfs.

Work was commenced July 10 and suspended September 30 and consisted in dredging a channel to a depth of 16 feet, having a length of 8,475 feet, with a width in the bottom of 60 feet; the narrows were also straightened by the excavation of a channel 100 feet in width.

In doing above work, some 99,979 cubic yards were removed.

Only the most urgent work was performed as the dredge was greatly needed at Byng Inlet.

DAWSON POINT.

Dawson point is a landing on Lake Timiskaming opposite Haileybury, in the District of Nipissing.

The wharf was not raised but minor repairs which consisted in replacing two broken fenders, were made March 11. Materials were taken out of the stock from the Haileybury shipyard.

Expenditure to March 31, 1912, is $13.05.

DETROIT RIVER (MALDEN FRONT).

The tonnage on this river is enormous, being far greater than on any other in the world, and the wash from the large steamers has caused considerable erosion, in past years, to the shore line, which is termed Malden Front, south of Amherstburg.

On August 5, 1911, authority was received to expend that portion of the vote which had passed parliament, namely, $1,666.66.

An arrangement was made with Mr. C. R. Mickle, of Amherstburg, whereby he undertook to supply and place the stone required, wherever and as directed, for the price of $2 per cubic yard.

Operations were commenced on the 11th and ceased on September 23, 1911. During this time, some 650 cubic yards of stone was placed along a frontage of approximately 375 lineal feet, and the work performed has proved of material benefit.

A grant of $2,333.34 was passed at the last session of parliament, and was authorized to be expended on December 21 last, but as work had been closed down for the winter, none of this grant could be utilized.

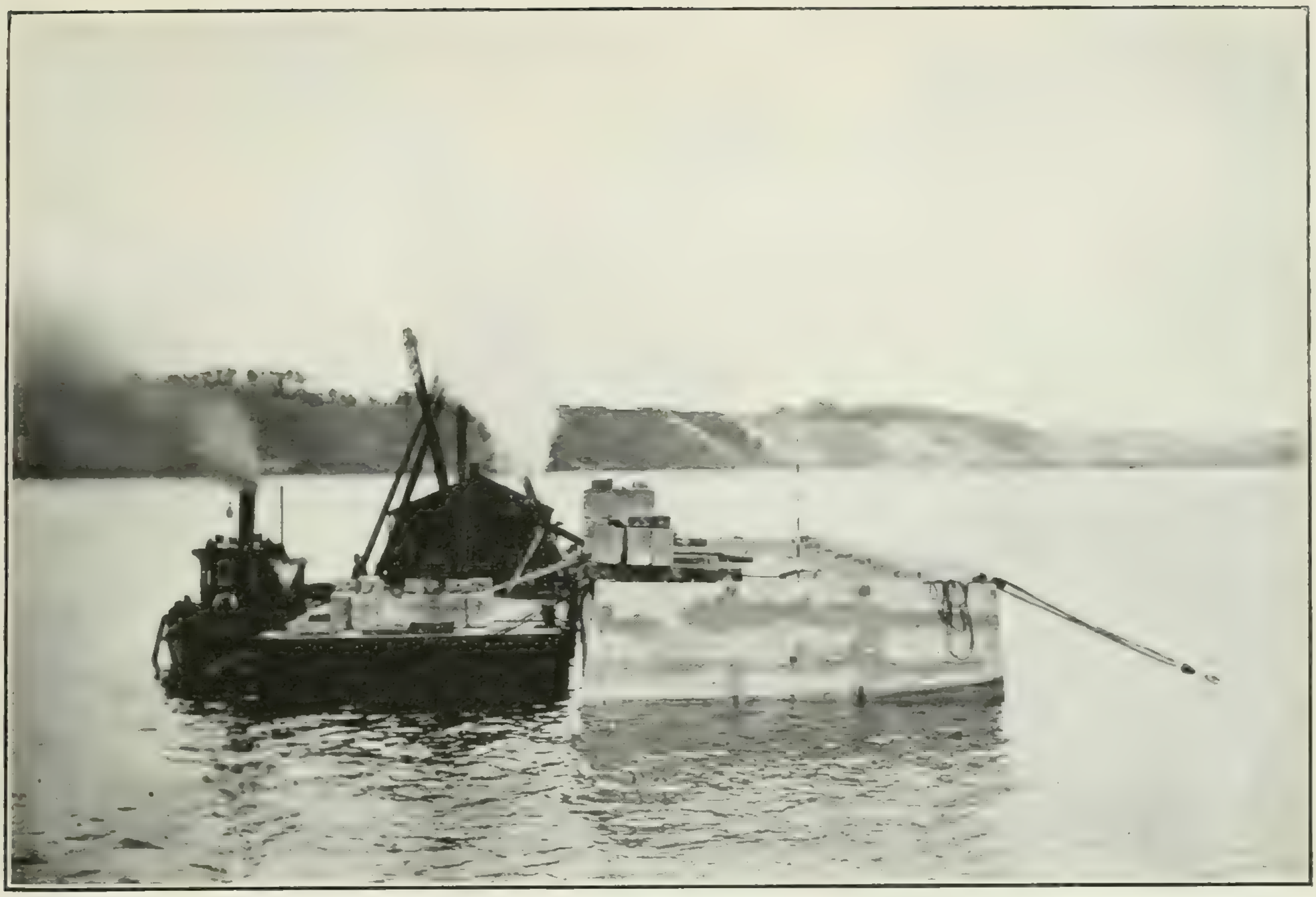
Total expenditure during the fiscal year, 1911-12, was $1,333.



Concrete caisson at Goderich being towed out to final location.



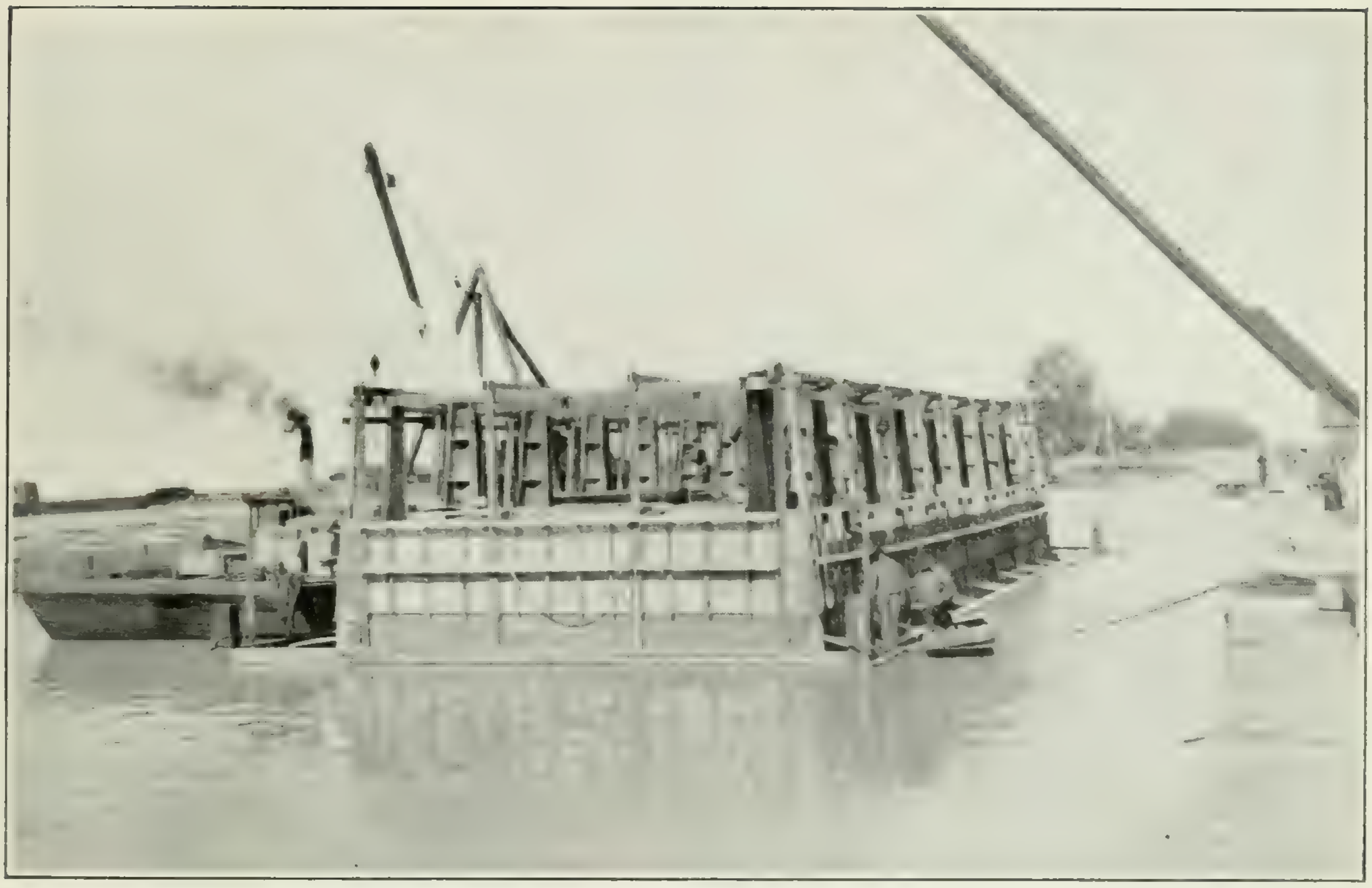
Goderich, Ont.—Caisson in position.



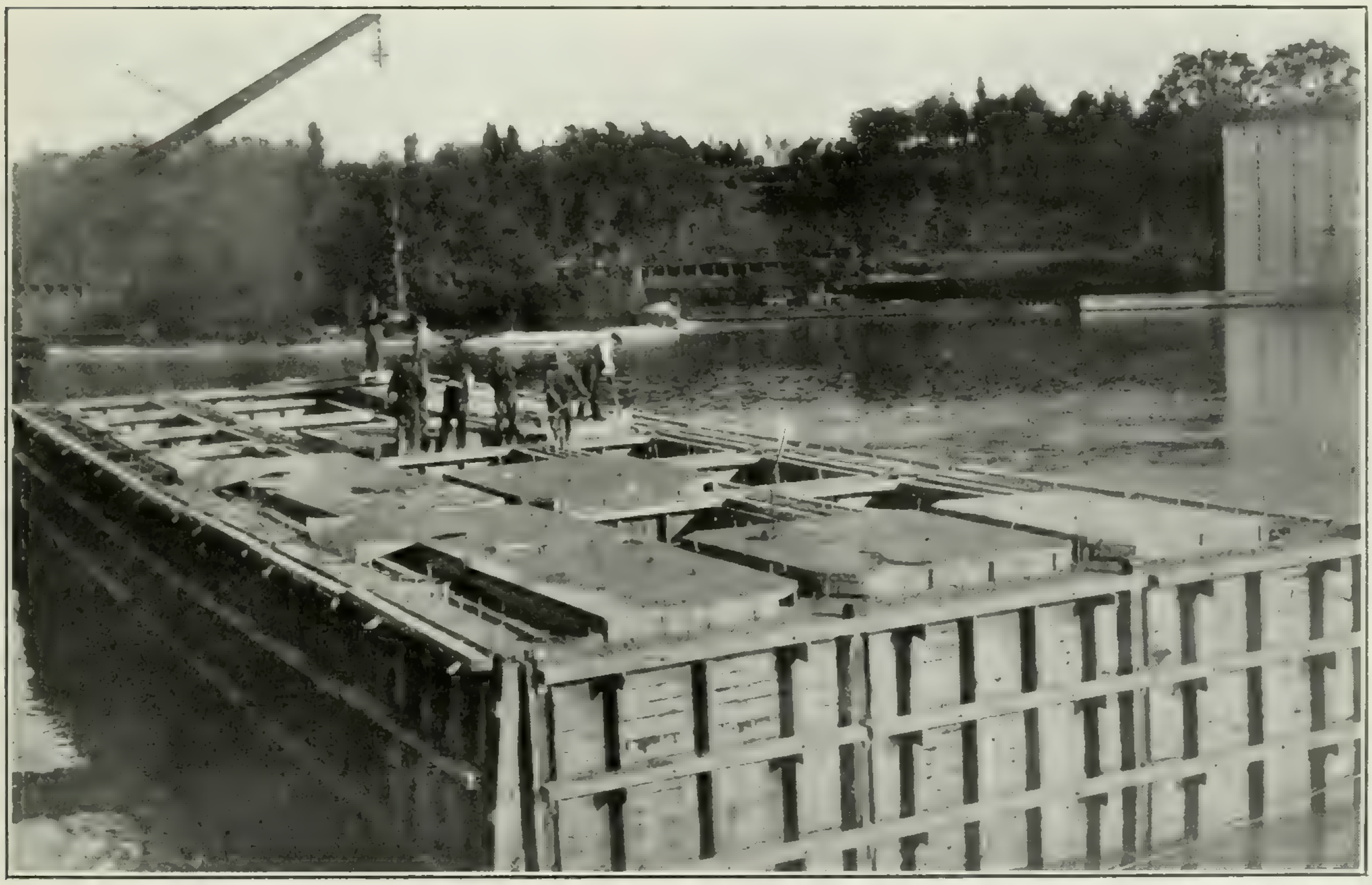
Setting caisson No. 1 on range S.W. Breakwater, Goderich. Heavy front wall of same shown by the number of concrete blocks required to keep it level so as to settle evenly.



Three concrete caissons sunk in harbour at Goderich in fall 1911.



Concrete caisson at Goderich about ready to launch from dry dock.



Concrete caisson S.W. Breakwater, Goderich, showing forms still in place and completion of upper portions of walls.

DRYDEN.

It was decided to build a wharf at Dryden, Rainy River district, on the Wabigoon river, but it was not practicable to drive piles during the winter as the ice was not of sufficient thickness to bear the pile-driver. The timber necessary for the braces and tops of wharf were ordered and delivered at a cost of $455.12. The piles were ordered for this work but not delivered by March 31. The wharf to be of pile construction and of the following dimensions, 60 feet long, 20 feet wide, and the cost $1,000.

ECHO BAY.

Echo Bay, District of Algoma, is a small village on the Soo branch of the Canadian Pacific railway, and is 18 miles east of Sault Ste. Marie. The wharf is located on Lake George. The shoals where the dredging is to be done are located as follows: on Lake George, west side of railway; on Echo bay; at mouth of river on Echo bay, then at the mouth of the river, and in the Echo river; on the river to the foot of Echo lake, and from the foot of Echo lake into the lake.

On May 15 last, authority was given to perform certain dredging for which a contract had been awarded to Messrs. Kennedy, Ferrier & Robertson, at 22 cents per cubic yard, place measurement, and for which $11,000 was authorized to be expended.

Work was commenced August 12 and carried on till November 2, when work closed for the season.

The work is as follows: one cut, 350 feet in length by 75 feet in width to 7 feet in depth, material scowed away; one cut, 2,000 feet long by 30 feet wide to a depth of 7 feet, overcast; one cut, 500 by 30 by 7 feet, overcast; to foot of Echo lake, one cut, 800 by 30 by 7 feet, overcast; and Echo lake, one cut, 500 by 30 by 7 feet, overcast.

In doing the above work, some 3,445 cubic yards were scowed away and 13,510 cubic yards were overcast; the latter to be scowed away later at the contractor's expense.

On September 20 last, authority was given to expend the sum of $751 in repairs to the wharf by day labour.

Work was carried on from November 1 to 8, and consisted in driving some 19 piles where same had been carried away by ice, also properly securing same to the existing structure and placing two new stringers.

In doing this work, some 950 lineal feet of piling and 200 f. B.M. capping were used.

Total expenditure for fiscal year, 1911-12, is $3,262.75.

FIVE MILE NARROWS.

The work embraced under this heading consists in the removal of obstructions or shoals in the regular inside steamboat channel from Penetanguishene to Parry Sound, at Two Mile Narrows, Five Mile Narrows, Seven Mile Narrows and the Devil's Elbow, all of which are located within 10 miles of Parry Sound.

On May 2 last, authority was given to remove 12,800 cubic yards, scow measurement, at these places, and on June 27 last, the sum of $22,535 was authorized to be expended on same, the work to be performed by the C. S. Boone Co., at the following rates per cubic yard, class 'A' $2.74; 'B' $2. and 'C' 49 cents.

Work was commenced June 3 and completed November 22, and consisted in the deepening of the Two Mile Narrows to a depth of 10 feet and a width of 60 feet, also deepening and straightening the channel at Five Mile Narrows to 10 feet deep and

60 feet wide, also removing the rocky spit from the south side of the channel at Devil's Elbow.

In doing the above works the following quantities were removed:—

	Rock.	O.M.	Rock overcast.
Two Mile Narrows....	3,114 c. yds.	3,790 c. yds.	837 c. yds.
Five Mile Narrows ..	55 "	2,916 "	
Seven Mile Narrows..	3,390 "	1,585 "	450 "
Devil's Elbow..	700 "	.....	...
	7,259 "	8,291	1,287 "

On February 7, authority was given to expend the sum of $2,100 for the construction of glance booms of B. C. fir at the Two and Seven Mile Narrows.

The timber for these works has been secured but the work will not be proceeded with until the opening of navigation.

Total expenditure for fiscal year, 1911-12, is $1,056.76.

FORT WILLIAM.

Fort William, a city of 22,000 inhabitants, is situated at the west end of Lake Superior, at the mouth of the Kaministiquia river, in the District of Thunder Bay.

It is the principal lake port on the north shore of Lake Superior, and the termini of two transcontinental railways.

Through this port, the terminus of lake navigation, the bulk of the grain, grown in the Canadian west, passes on its way to the markets of the east.

Between September 1 and December 10, 1911, there were shipped by vessel from this port, 45,365,459 bushels of wheat; 7,752,803 bushels of oats; 1,639,117 bushels of barley, and 712,718 bushels of rye.

During the same time, there were shipped by rail, 691,154 bushels of wheat; 260,800 of oats; 28,638 of barley, and 76,144 bushels of rye.

592 vessels left this port, outward bound to the United States, carrying 1,665,154 tons with a total crew of 13,123 men. 893 coastwise vessels left this port, carrying 1,485,431 tons with 31,423 of crew.

Heavy shipments of package freight, merchandise and coal are received during the season of navigation and dispatched westward.

Dredging was resumed in this harbour, for the season of 1911-12, on April 28, when dredge *No. 15* commenced work.

Dredge *No. 15* started work on April 28.
" *Dominion* started work on April 29.
" *No. 5* started work on April 29.
" *Frank* started work on May 13.
" *Shuniah* started work on May 18.
" *No. 1* started work on May 13.
" *No. 6* started work on May 25.
" *No. 8* started work on July 5.

These dredges have been almost continuously at work during the season, and have operated in all parts of the harbour.

Dredging stopped for season on Mission and Kaministiquia rivers on November 20, and on McKellar river on December 4.

Dredge *Shuniah* was withdrawn from the work to go to Nipigon on September 2, and returned on October 18. Dredge *No. 1* was withdrawn from the work on September 30.

The work carried on consisted of widening the Mission river on the south side, so that very little remains to complete.

The removal of shoal areas, widening and deepening was carried on, so that, at present, the Grand Trunk basin, exclusive of slips 2 and 3, is almost completed.

A large amount of work was done in widening and deepening the entrance channel to the Mission river, so that a small amount of work, in the spring, will permit the full use of same.

Kaministiquia River.

On the Kaministiquia river, a large amount of widening was done, and from the subway to Thunder bay, an average of some 35 feet in width is all that remains to be done to complete the full widening.

Deepening of the Kaministiquia river from Black's elevator to the Grand Trunk Pacific dock was executed. Deepening of the river from opposite No. 5 shed to shore line of Thunder bay was accomplished, and now very little remains of the deepening to complete the contracts for these sections.

The sections dredged over are as follows:—

Grand Trunk Pacific dock, West Fort.—The area in front of the Grand Trunk Pacific dock, extending from the Grand Trunk Pacific bridge to opposite east end of dock was widened and deepened, covering a length of 2,400 feet by an average width of 330 feet.

Elevator 'D.'—A large amount of the north bank, west of elevator 'D,' was removed in widening the river, but owing to piles of gravel and sand, as well as city water-pipes, it was impossible to complete this section.

Murphy's coal dock.—A section of the river opposite this location was deepened, covering a length of 700 feet by an average width of 330 feet.

Elevator 'C' to McKellar river.—This section was deepened to grade and widening was carried on to opposite subway; the area covered was a length of 4,400 feet by a width of 350 feet.

Canadian Northern Railway dock.—Deepening was carried on opposite this location in the general scheme of deepening 25 feet grade.

Consolidated elevator.—A shoal spot in front of this elevator was removed.

Canadian Pacific Railway shed 'No. 2' to coal dock.—Deepening in river was carried on in front of this section to complete work to full depth.

Elevator 'B.'—The full width of river in front of this elevator and up to subway was deepened to grade.

Opposite Canadian Pacific Railway coal dock.—A large amount of deepening was carried on in this section.

Opposite 'No. 5' shed.—Deepening was carried on for the full width of the river from west end of No. 5 shed to subway.

Opposite power-house.—Almost the full amount of widening in this section was done, and very little work will complete same.

Canadian Northern railway to Grand Trunk Pacific bridge.—This section was deepened to grade, but no widening was accomplished.

Empire elevator to elevator 'C.'—Almost all the widening for this section was done, and only some 35 feet of the widening remains to be completed.

Canadian Northern railway to Black's elevator.—Deepening was carried on in this section to enable full draught boats to reach this locality but, owing to ice, this section could not be completed.

Opposite Ogilvie's.—A small section of widening was carried on at close of season.

Mission River.

Widening was carried on, on the Grand Trunk Pacific side of stream, and now only a small amount of work remains to complete the widening on this side.

Opposite Seaman Kent.—A small amount of widening was done at this locality to permit steamers to be turned.

Grand Trunk Pacific basin.—The balance of the heavy work of creating the Grand Trunk Pacific basin, proper, was accomplished, covering a length of 1,200 feet by a width of 800 feet.

Grand Trunk Pacific steel dock.—Owing to the Grand Trunk Pacific constructing this dock, a large amount of heavy work had to be done in widening the river at this location.

Mouth of Mission.—Shoal areas were removed in this section.

Mission entrance channel.—Considerable progress was made in developing this entrance channel, and a large section was widened and deepened.

Backfilling.—Backfilling was placed behind cribs, placed in position, to fill up areas removed in dredging cribseats.

McKellar River.

Work was commenced in opening up this waterway and despite the late fall start, considerable progress was made but ice delayed the work considerably. A length of 945 feet by a width of 108 feet was gone over, and sufficient water given for full operation by dredges next spring.

The quantity of material removed by the various dredges was as follows:—

Dominion	1,156,802
Frank	367,705
Shuniah	435,007
No. 15	206,911
No. 8	415,113
No. 6	582,327
No. 5	717,056
No. 1	41,890
Clam shell *Imperial*	12,822
" *Province*	9,086
" *Empire*	7,504
Backfilling	52,521
Total	4,004,744

A total of 4,004,744 cubic yards, of which 36,744 cubic yards were rock, were removed from the areas mentioned above, from April 28 to December 4, made up as follows:

Kaministiquia river—	
G. T. P. West Fort	307,123
Elevator 'D'	112,377
Murphy's dock	39,995
Elevator 'C' to McKellar	226,638
C.N.R. dock	10,797
Consolidated elevator	760
C.P.R. shed 'No. 2' to coal dock	95,544
Elevator 'B'	209,141
Opposite C.P.R. coal dock	244,282
Opposite 'No. 5' shed	101,726
Opposite power-house	443,353
C.N.R. dock to G.T.P. bridge	149,036
Empire elevator to elevator 'C,' widening	494,045
C.N.R. to Black's elevator	102,781
Opposite Ogilvie's	12,770
Mission river—	
Mission river, widening	125,361
Opposite Seaman Kent & Co	13,915
G.T.P. basin	638,199
Opposite G.T.P. steel dock	104,838
G.T.P. steel dock	157,671
Mouth of Mission	22,866
Mission entrance channel	306,208
Backfilling	52,521
McKellar river—	
McKellar river	32,797
Total	4,004,744

Generally.

Work was carried on by the staff in taking levels in all portions of the harbour to ascertain contour lines; complete information was obtained in regard to all properties required for the development of the McKellar river, and plans in quadruplicate were prepared for expropriation. During the winter, a complete survey of the harbour was made, and some 21,000 soundings were taken and plotted on plans. Tests were made for ascertaining the nature of material to be excavated from McKellar river.

Description by metes and bounds and plans were prepared for extension of West Fort turning basin, whereby the expropriation of the properties of the Canada Iron Foundry Company and the Canadian Northern Railway Company was eliminated.

FORT WILLIAM.

Wharfage.

Work was continued on the Smith & Heney contract, and up to date, a total of thirty-four cribs have been sunk in position, of which twenty-one cribs were sunk during 1911. Operations closed down for the season on December 5, owing to severe weather and ice. The following cribs are now sunk in position: 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5 and 4.

The construction of concrete blocks was carried on all season; concrete blocks were placed on cribs sunk, covering a length of 3,342 feet.

Mass concrete was carried on and work completed, covering a total length of 2,530 feet.

8 by 12 walings were placed in position on all finished mass concrete work.

Backfilling behind finished concrete work was carried on to fill voids left by scow trench.

The amount paid to the contractors was $55,667.95, and to inspectors, $2,344.65.

Amounts totalling $83,295 were payments held back from contractors as part of repayment on cost of timber advanced at commencement of work; up to date the contractors have repaid the department for 3,702,000 f. B.M. out of the 5,348,182 f. B.M. which was supplied by the department.

The total expendition at Fort William for the fiscal year 1911-12, is $827,025.96, including $750,165.02 for dredging.

GODERICH.

Goderich is the county town of the County of Huron, situated on the easterly shore of Lake Huron, at the mouth of the Maitland river, about 68 miles from Sarnia, and 63 miles from London. It is the terminus of the Buffalo & Goderich branch of the Grand Trunk railway and of the Guelph & Goderich branch of the Canadian Pacific railway. The West Shore Electric railway also runs into the town. Population about 6,000. It is a favourite summer resort; it possesses many industries and is a progressive and thriving town; located on the harbour front is one of the largest flour mills in Canada—capacity being 1,200 barrels per day. There are two reinforced concrete elevators, one with a capacity of one million bushels and the other with a capacity of 600,000 bushels, the former being the property of the Goderich Elevator & Transit Company, and the latter being a storage elevator for the Western Canada Flour Mills Co., Limited.

Goderich is a port of entry, and during the past season three lines of passenger and freight steamers called regularly. The grain traffic is increasing rapidly, and during the season of 1911, the amount of grain brought into this port was approximately 10,264,000 bushels. In addition, a large amount of coal, ties, steel rails, timber and fish were handled over the docks.

During the season, 139 vessels with a tonnage of 138,988 tons, entered this port, while 140 vessels departed. The custom duties collected at this port, during the past fiscal year amounted to $24,513.02.

The Canadian Pacific railway is now building a spur line adjoining the docks, and it is anticipated that this company will make this port a point of call for their regular line of boats from upper lake ports. The maximum draught of vessels which can enter this port is 19 feet at extreme L.W.L.

At the lats two sessions of parliament, $291,000 was voted towards harbour improvements at this point.

On May 3, 1911, dredging was resumed on a two-year contract, which was awarded to Mr. W. L. Horton, of Goderich, at the price of $2.75, $0.75 and $0.25 per cubic yard, scow measurement, for material classified as 'A,' 'B' and 'C' respectively.

On April 23, 1911, authority was granted to expend the sum of $37,500 on this work, and which amount was subsequently increased on November 2 following by $10,000.

Dredging.

Dredging was carried on, practically, continuously until December 12 last when operations ceased for the winter. During that period, dredging was carried on in the inner harbour, in channel at entrance to piers, and in channel at outer entrance to

piers, leaving a minimum depth of 20 feet below zero of gauge in inner harbour, and 22 feet at entrance to harbour.

The amount of material removed is as follows:—

Forty-seven thousand eight hundred and forty-four cubic yards, scow measurement, of sand, clay and gravel; 11,549 cubic yards, scow measurement, of rock.

Repairs to Piers.

On June 16, 1911, authority was received to expend the sum of $2,000 on repairs to piers.

Operations were commenced on August 2 and continued, at intervals, until the end of the fiscal year, and consisted of general repairs to decking and a few face timbers of both north and south piers, and to the river breakwater, and the repairing, caulking and painting of departmental boats and scow, with the construction of a small building to be used as a temporary office at this point.

In the performance of the above work, some 12,500 f. B.M. of hemlock and pine timber, 130 lbs. of iron and 10 cords of stone were used.

Breakwater.

On October 29, 1910, a contract was awarded to Mr. Michael Connolly of Montreal, for the construction of 600 feet of breakwater to the south-east of entrance to harbour, and to be built of reinforced concrete substructure filled with stone and gravel, and mass concrete superstructure. Contract price is $140,417. On March 28, 1911, an order in council was passed authorizing transfer of this contract to Mr. Wm. Bermingham, of Chatham, Ontario.

Work was in progress at the beginning of the fiscal year until October 31, when operations ceased for the winter. During that time, three caissons were constructed and stored in inner harbour for future use in breakwater.

Considerable interest is taken in this work owing to its somewhat novel character of design and to date, complete success has followed the work, the concrete in caissons being of such a character that they are practically water-tight. The launching of these caissons from the scow in which they were completed, was carried out most successfully. Each caisson is 100 ft. long, 26 ft. high and 35 ft. wide at top, is heavily reinforced with steel bars, and weighs approximately 1,711½ tons.

Total expenditure on these works during the fiscal year 1911-12, was $89,824.66 of which $47,331.29 was for dredging.

GRAVENHURST.

Gravenhurst, District of Muskoka, is situated at the south end of Lake Muskoka, and is the terminal of the boats of the Muskoka Lakes Navigation Co., and is the chief centre of tourist traffic in the district. Important industries are located here, such as tanneries and lumber mills.

On February 16, 1911, a contract was awarded to Mr. D. G. Stewart, of Ottawa, to construct a wharf for the sum of $12,984.

Work was commenced March 20, 1911, and resumed on January 25, and consists in building the entire substructure of the wharf, including cribs and concrete work, to the water level, and the placing of stone in the approach to the wharf, practically completing same.

The work, when completed, will consist of 110 feet of stone approach 16 feet wide on top and 160 feet of concrete wharf 16 feet wide and 60 feet of same 26 feet wide.

On March 13, 1912, authority was given to have a small boat landing constructed in this wharf and the contractor agreed to perform the work for the sum of $250. This will be done as the work progresses.

Total expenditure for fiscal year, 1911-12, is $6,528.65.

GRIFFITHS ISLAND.

Griffiths Island is the largest of three islands in the Georgian Bay, at the entrance to Colpoys Bay, and Owen Sound.

It has an area of 3,000 acres, of which a considerable portion is arable. There is a saw mill on the island near the site of the wharf. The island is fairly well timbered and a lighthouse stands on its northeasterly side. Population, 100.

On August 10 last, authority was given to repair the wharf by day labour, the sum of $400 being authorized for the work.

Work was carried on from the 1st to 24th October, and consisted in renewing the face timbers, where required, and filling the cribs to the decking with stone of good size.

In doing the above work, some 693 lbs. iron were used, also 1,363 feet B.M. hemlock, 55 feet B.M. tamarac, 1,880 feet B.M. plank, and 30 cubic yards stone.

Total expenditure for fiscal year, 1911-12, is $362.40.

HAILEYBURY.

Haileybury, population 5,000, District of Nipissing, situated on the west shore, of Lake Temiskaming, is the chief lake port on the route of the Toronto and North Ontario railway, 108 miles from North Bay, and 5 miles from Cobalt, the heart of the important mineral district.

At its last session, parliament granted $18,500 towards the construction of an extension to the Haileybury dock. The main work described in annual report, 1910-11, was well advanced March 31, 1911, and during the fiscal year, 1911-12, the approach of the wharf was raised 3 feet, a length of 200 feet by 40 feet wide; two sheds were built, one 104 by 40 feet, the other 24 by 24 feet; the lower bracing system of pilework was completed; the landing-head was covered with 4-inch planking, and capping on landing-head and approach was treated with 'Carborine' preservative coating; two to four continuous rows of round timbers were secured along exposed ends and outer face of landing-head, as further protection against ice; the main slip was lowered, pending regulation of Lake Timiskaming.

Expenditure to March 31, 1912, is $9,456.86, of which $727.61 was for dredging.

Dredging.

The departmental dredge *Queen* worked at Haileybury (October 23-November 11), making one cut around the northeast corner of dock, 289 lineal feet, 30 feet wide, to a grade depth of 10 feet.

1,894 yards (scow measure) clay was removed and spoiled to deep water, ½ mile from dock.

HAMILTON.

Hamilton, Wentworth county, is situated on the southwest shore of Burlington bay, at the westerly extremity of Lake Ontario. It has extensive manufactures, and is distant 39 miles from Toronto. Population 80,000.

On June 6 last, authority was given to expend the sum of $60,000 for the construction of a wharf and two retaining walls, for which a contract was awarded, on January 18 last, to Mr. Jos. Battle for the sum of $60,844.

Work was carried on from April 16 to November 30, when work closed for the season.

The work done during the season consisted in driving a line of steel piling 179 feet 10 inches; driving steel main piles and wooden sheet piles for a length of 120 feet; the construction of two cribs 84 by 50 feet, and the partial construction of a third crib to a height of 10 courses.

On April 8, authority was given to have the departmental dredge *Sir Richard* perform certain dredging, made up as follows: 18,000 cubic yards at the inland lines; 60,000 cubic yards at Oliver Plow works, afterwards increased; 6,815 cubic yards at Steel Co., of Canada, and 30,000 cubic yards at revetment wall; also on July 24 last, authority was given to perform certain dredging at the Royal Hamilton Yacht club; on September 1, authority was given for certain dredging at Hamilton Motor works; on September 11, certain work at Brown's wharf, and on the same date, certain work for the Hamilton Ferry Co., was authorized.

The *Sir Richard* commenced work at the inland lines on April 20 last, and suspended same on April 26, as work was urgently required at the Oliver Plow works, where she began April 27, remaining there till July 15. From July 17 to 20, she dredged crib seats for contractor Battle at the new revetment wall, after which she proceeded to Bronte, returning on August 30 to work at the Hamilton Steamboat Co., where she remained till September 7; then proceeded to R.H.Y.C., working there from the 8th to the 9th. On the 11th, she returned to the Hamilston Steamboat Co., remaining there till the 16th. From the 18th to the 25th she was at Brown's wharf, and from the 27th to the 29th she was again at the inland lines, and from October 8 to November 10 at the removal of a shoal in the bay off the wharfs of the inland lines, and from November 10 to 23 at the Steel Co., of Canada, when work was suspended for the season.

Dredge *No. 5* began work at the Oliver Plow works on July 12 and was continuously employed at this place till November 18, when she closed down for the season, with the exception of 5 hours dredging for the contractor in rear of the steel piling, forming part of the revetment wall, now under construction.

On December 23, 1910, authority was given to have the remains of the wrecked steamer *Magnus* removed from the harbour in the vicinity of the revetment wall, and arrangements were made with Mr. J. E. Russell to do this work for the sum of $1,400. The work was duly performed.

The departmental dredges removed the following quantities from the various parts of the harbour:—

	Cubic yards. Scow measure.
Hamilton Steamboat Co.	2,970
Brown's wharf	1,620
Royal Hamilton Yacht Club	1,800
Ferry Co.	2,700
Inland Lines and shoal off same	18,177·7
Crib seats	2,205
Oliver Plow Works	70,313
Steel Co., of Canada	3,060

Total expenditure for fiscal year, 1911-12, is $32,334.35, of which $8,896.35 was for dredging.

HAWKESBURY.

Dredging.

The departmental dredge *Nipissing* worked at Hawkesbury, (May 25-June 10), making two cuts, each 755 feet long, to clean out inner part of channel to the Hawkesbury Company's wharf, and one other cut 290 feet long to make a channel for logs, to a grade depth of 8 feet.

2,674 yards boulders, gravel and clay was removed and spoiled at the head of Long Sault rapids, 4 miles distant.

HUNTSVILLE.

Huntsville, District of Parry Sound, is situated on the northern division of the Grand Trunk railway, 145 miles north of Toronto. Population 2,100.

On January 12, 1911, authority was given to expend $600 in repairs to the planking of the existing wharf by day labour, and to this amount the sum of $150 was added on August 5 last.

Work was commenced August 1 and completed the 31st. It consisted in renewing the decking on the existing wharf for a length of 220 feet and a width of 24 feet with a 3-inch pine and tamarac planking, also renewing the 5 by 10-inch deck capping.

In doing this work, some 33,962 feet B.M. pine and tamarac and 1,100 lbs. iron were used.

On August 5 last, authority was given to proceed with the extension of the wharf by day labour.

The work was carried on from September 4 till October 31, and consisted in building an extension of pile work to the existing wharf having a length of 98 feet and a width of 24 feet.

In doing this work, some 8,770 feet B.M. pine, 799 lbs. iron and 1,562 lineal feet of tamarac piles were used.

Work was again proceeded with from January 4 to March 30, and consisted in the construction of a further pile work extension 110 feet in length by 24 feet in width.

In doing this work, some 1,510 lineal feet tamarac piles, 550 feet B.M. hemlock, 678 lbs. iron, 8,208 feet B.M. tamarac, 934 feet B.M. pine, 400 feet B.M. cedar and 8,000 feet B.M. dressed wood were used.

Total expenditure for fiscal year 1911-12 is $2,951.58.

JEANNETTE'S CREEK.

Jeannett's Creek is a village, situated near the River Thames, in the County of Kent, about 14 miles from the city of Chatham, and about 2 miles from the mouth of the river. Population about 100. It is the centre of a rich farming district, and on the line of the Grand Trunk railway.

On July 24, 1911, authority was received for the dredging of a navigable ditch, which reaches from the River Thames to within a short distance of the Grand Trunk railway, and which is utilized to a large extent by fishermen, and different residents in the surrounding district.

Work was performed between August 10 and August 23, 1911, by the Chatham Dredging and Construction Company, price paid being 12½ cents per cubic yard, place measurement.

In the performance of this work, 5,805 cubic yards of silt, sand, &c., were removed, which provided a channel 25 feet wide at the bottom with a depth of 5 feet at low stage of water.

Expenditure, including inspection, $756.12.

KENORA.

An examination was made on February 26 of various sites for a proposed wharf at Kenora, on the Lake of the Woods, and a site at foot of the street leading from the post office to the bay was chosen. The wharf to have a rock-protected embankment of 100 feet and extend out 400 feet into the bay, on a width of 16 feet. It is to be of pile construction as the water is 18 feet deep. The estimated cost will be $11,800. A public wharf is a necessity at Kenora, as wharf accommodation is limited and the number of steamers and motor boats is increasing every year.

KETTLE FALLS.

An application having been made by the Ontario and Minnesota Power Company to construct dams at Kettle river for the purpose of storing water on Namaken, Kapetogamak, and other lakes to be used for power purposes at International Falls, Minnesota, at Fort Frances, Ontario. An examination was made of the falls in April. The falls are at the lower end of Kettle river, which is 5 miles long, and forms the boundary between Canada and the United States. The river drains a basin of about seventy-five miles in extent, containing numerous lakes, chief of which are Namaken and Kapetogamak. The former lies between Canada and the United States; the latter is entirely in the State of Minnesota, and are connected by a narrow passage and are of the same elevation. The area of the proposed storeage basin is about 80 square miles. The plan of the proposed dam provides for three 10 feet openings, one 14 feet and a fishway on the American side. These openings should be amended by having the same openings on the Canadian side. The regulation of the water should be controlled by the department. It was also recommended that the right to build a canal lock and dam should be reserved, without any claim for damage from the company. Under these conditions, it was recommended that the plans be approved.

KINCARDINE.

Kincardine is a prosperous town situated on the east shore of Lake Huron, in the County of Bruce, 30 miles south of Southampton and 32 miles north of Goderich. It is the terminus of the Wellington, Grey and Bruce Division of the Grand Trunk railway. Population about 3,000. Principal industries of the town are: two furniture factories, salt works and boiler machine works. It is surrounded by a prosperous farming country. Considerable stock is raised, and a large amount of cheese and butter is marketed. It is the principal summer resort on the east shore of Lake Huron; it is a harbour of refuge for vessels not drawing over 14 ft., and possesses facilities for both imports and exports, either by water or rail; principal imports are coal, wood, lumber, fence posts, ties and fish; principal exports are salt, furniture, iron bridges, boilers, &c. It is port of entry and a regular port of call for a line of package freight steamers running between Lake Huron ports and Sault St. Marie. Two steam tugs and one launch are engaged in fishing at this point. 44 vessels arrived at this port during past season, with a tonnage of 18,193 tons, and custom duties collected during past fiscal year at Kincardine amounted to $6,023.94.

Dredging.

On May 9, 1911, authority was received to commence dredging, work to be performed by the Dredging & Drainage Company of Ontario, Limited, at the rate of 17½ cents per cubic yard, scow measurement.

Work commenced on June 6, 1911, and was completed on Sept. 5 following, during which time 42,800 cubic yards of sand, gravel and silt were removed in providing a depth of 14 ft., in inner harbour and between piers, and 16 ft. at outer entrance to harbour.

Repairs to piers.

At the last two sessions of parliament the sum of $1,500 was voted for repairs to piers, and on August 5, 1911, authority was received to expend $625, which amount was supplemented by $875 on December 21 last.

Operations were commenced Sept. 11 and continued until October 31, when work was suspended owing to first grant being exhausted. Operations were again resumed on February 17, and continued until March 30 last.

The work performed consisted of general repairs to the decking and face timbers of both piers, together with the renewal of 12 mooring posts.

In the performance of this work, some 20,649 feet B.M. of pine timber, 515 lineal feet of rock elm waling, 327 lbs. of iron, &c., were used.

The total expenditure during the fiscal year 1911-12 was $1,833.63 and $7,232.16 for dredging.

KINGSVILLE.

Kingsville is a thriving town, situated on the north shore of Lake Erie, in the County of Essex, about 25 miles east of the mouth of the Detroit river, and on the line of the Père Marquette Railway. An electric railway line also runs through this place, between Windsor and Leamington.

Dredging.

On August 15, 1911, authority was received to remove 50,000 cubic yards, scow measurement, work to be performed under contract, by the Windsor Dredging Company, for the price of 29½ cents per cubic yard, scow measurement.

Dredging was commenced on August 18, 1911, and continued until November 3 last, when the whole of the grant authorized was expended.

The work performed consisted of deepening and enlarging the turning basin in harbour, and entrance channel to harbour.

Dredging was performed to a depth of 15 feet below L.W.L.; 50,000 cubic yards of sand and gravel were removed.

Repairs to Piers.

At the last two sessions of parliament the sum of $10,000 was voted for repairs to piers. On August 5, 1911, authority was received to expend the sum of $4,166.66, and which sum was further supplemented by $5,833.34 on December 21 following.

Operations were commenced on September 1, 1911, and continued until December 30 following, when work was suspended, owing to the first grant being exhausted. Operations were resumed on January 19 last, and continued until the end of the fiscal year.

The work performed consisted of the reconstruction of the foundation of the outer 650 feet of east pier, with partial renewal of superstructure of said pier. The original foundation consisted of piles driven to a depth of 10 feet below water level, and, owing to the fact that dredging was being performed to a depth of 12 feet and over, the foundation was gradually being undermined and it became necessary to substitute new piles of a greater length, on which the superstructure now rests for the 650 feet mentioned. In addition, the warehouse was moved, repaired generally and roof painted. A large portion of the decking on the pier was renewed.

In the performance of this work, some 61,780 feet B.M. of oak and pine timber, 12,535 lineal feet of oak piling and 7,724 lbs. of iron were used.

The total expenditure during the fiscal year, 1911-12, was $24,860.78, of which $14,920.91 is for dredging.

LAKE NIPISSING (MONETVILLE).

At its last session, parliament granted $3,500 towards the continuation of the improvement in the west arm of Lake Nipissing to make two rock cuts extending navigation 4 miles through Shanty lake to Monetville.

Work started March 13, 1911. The rock cuts at Monetville were well advanced during the early part of last summer, but had to be discontinued June 22, owing to lack of funds.

In cut No. 1, work included 303 lineal feet of hand drilling and removal of 200 yards of rock above water and 104 yards of rock under water. In cut No. 2, work included 294 feet of steam drilling, 764 feet of hand drilling, and the removal of 30 yards of rock above water. The bulk of material remaining to be removed above elevation 635, for 6-foot navigation, through cuts 25 feet wide, aggregating 350 lineal feet, had been drilled and blasted. Plant, explosives and other supplies are stored at site of work.

Expenditure to March 31, 1912, is $2,223.78.

LAKEPORT.

Lakeport, Northumberland county, is the port of Colborne, and is situated in the west riding of the county, 14 miles east of Cobourg on the north shore of Lake Ontario.

On June 16, authority was given to expend the sum of $15,500 for the completion of the reconstruction of the wharf, for which a contract had been awarded to Mr. S. Gowan on November 7, 1910, for the sum of $16,430.

Work was resumed in April and completed November 30, and consisted in the construction of a wharf of cribs and spaces, having 10 cribs, 8 of which are 30 by 16 feet, varying in height from 12 to 16 feet, with spaces 22 feet, also one crib 75 by 16 feet adjoining the original crib at the outer end which is 101 by 42 feet. The total length of the wharf is 592 feet and the stone approach is 145 by 16 feet wide on top.

On September 11, authority was given to construct a warehouse on the wharf at a cost of $400. This work has been completed and the building is 30 by 16 feet with a height of 10 feet.

Total expenditure for fiscal year 1911-12 is $15,504.82.

LAKE TIMISKAMING.

During the past year, several works were carried out on Lake Timiskaming with the departmental plant, which has reached the stage of a well equipped construction plant.

Departmental construction plant is now stored, built, repaired and improved on a property near Haileybury, which has been acquired during the past season. The departmental dredging plant will also have its wintering quarters here in future. The construction of shipways, capable of handling the dredging plant, and coal and service wharf were recommended during the winter and will be completed and ready for use at an early date. The gasolene launch was maintained through the season. Timber in stock, temporarily drafted to other works, was replaced. An extension 15 feet 7 inches by 21 feet 4 inches was built to the storing shed, and a small pile-driver and other plant added. Light rails, coal cars, steel cable, &c., required for small coal plant were purchased.

LION'S HEAD.

Lion's Head, Bruce county, is a village of some 800 inhabitants situated on the west shore of the Georgian Bay, 22 miles north of Wiarton. There is a large saw-mill in operation and the output is very large.

On August 9, authority was given to expend the sum of $900 for the completion of the pile driving and protection works, by day labour.

The work was not proceeded with owing to difficulty in securing a pile driver, but a slight expenditure was incurred before it was found that the pile driver was not available.

On August 18, instructions were given to prepare contract plans and specifications for the construction of an extension 100 feet in length to the wharf on the west side of the harbour, and for this purpose the sum of $10,300 was authorized.

Plans and specifications have been duly prepared and forwarded to Ottawa and tenders are now being called.

Total expenditure for fiscal year 1911-12 is $693.79.

L'ORIGNAL.

L'Orignal (population, 1,000), Prescott county, is on the south shore of the Ottawa river, 54 miles below Ottawa, on the Canadian Northern railway.

During the summer, urgent repairs were made to dock and freight-shed at L'Orignal, August 28-30, which consisted in renewing some planks of the landing head and approach, replacing weak floor beams and fitting sliding doors of shed.

Other repairs were made during the winter, March 8 to 30, which consisted in repairing upper and lower landings; making a new slip in the upper landing; widening the slip on the lower landing; repairing broken crib-work in front of wharf; replacing stringers on the platform of upper landing; sheeting old slips; rebuilding platform at the back of upper landing; replacing all capping on landing head; replacing a broken pile in the approach; rebuilding the railing on the approach, and placing standards in the earth approach for proposed railing.

Expenditure to March 31, 1912, is $910.21.

MAGNETAWAN.

Magnetawan, Parry Sound district, is situated on the river of the same name, about 18 miles from Burks Falls.

Authority was given to expend the sum of $250 for the rebuilding of the warehouse on the government wharf at this place by day labour.

On April 5 last, an agreement was entered into with Mr. A. A. Agar to perform this work for the amount available.

The work was completed by the 1st July, and consisted in raising the building, placing sills under same and placing new posts therein, also renewing the roof and flooring and clapboards where required, and putting the doors and windows in good condition.

Total expenditure for fiscal year 1911-12, is $250.

MEAFORD.

Meaford, Grey county, is an incorporated town situated on the west side of the Georgian Bay, 21 miles west of Collingwood and 20 miles east of Owen Sound. It is the terminus of the northern division of the Grand Trunk railway. Population, 2,500.

There is a large grain elevator with a capacity of 750,000 bushels, also a number of factories and mills.

On April 8, authority was given to have the departmental dredge *Industry* perform certain dredging, also authority to have this dredge make a cut to the filtering basin of the town's waterworks system.

Work was commenced April 24 and completed June 28, and consisted in dredging the approaches to the inner harbour at the westerly end of the concrete breakwater to a depth of 23 feet having a minimum width at the westerly end of the breakwater of 300 feet and gradually widening to a width of 600 feet with a length of 1,540 feet.

In doing this work, some 4,531 cubic yards were removed for the waterworks system and 95,288 cubic yards for the harbour.

On May 30, instructions were given to prepare contract plans and specifications for harbour improvements for which the sum of $34,000 was authorized.

Plans and specifications were duly prepared and forwarded to Ottawa and the work awarded to Mr. G. Kastner for the sum of $36,700. The proposed work consists in the closing of the eastern entrance to the harbour and the removal of the 'L' of the inner breakwater.

On May 18, authority was given to expend the sum of $100 in repairs to the revetment wall by day labour.

Work was carried on from May 25 to June 8 and consisted in filling in the holes at the rear of the concrete wall with brush, stone and earth.

Total expenditure for fiscal year 1911-12, is $5,306.28, of which $4,588.41 is for dredging.

MICHIPICOTEN.

Michipicoten, District of Algoma, is the name of a river emptying into Lake Superior. It is not navigable from head to mouth owing to sand bars forming along same. The wharf is located at Mission village on this river about 500 feet west of the mouth. The location is on the original site of wharf used years ago by the Canadian Pacific railway, on the construction of their line. To the west of Mission village, some copper mines are in operation and a water power is being developed on a branch of the river.

On June 16, authority was given to expend the sum of $19,000 for the construction of a wharf, for which a contract had been awarded to Mr. D. G. Stewart, of Ottawa, for the sum of $18,430.

Work was commenced July 10, and completed November 7.

The work consists in the construction of a crib-work wharf having a total length of 207 feet with a width of 20 feet and a total height of 20 feet.

Total expenditure for fiscal year, 1911-12, is $18,747.

MIDLAND.

Midland (and Tiffin), Simcoe county, is a town of some 5,000 inhabitants, situated on an arm of the Georgian bay. It is the terminus of the Midland division of the Grand Trunk railway. Large quantities of lumber are shipped from this place. There is also a large smelter in operation.

Including Tiffin, there are three very large grain elevators located here, having a total capacity of four million bushels, of this the Grand Trunk railway elevator has two millions and the others one million each.

On April 26, authority was given to have the Canadian Dredge and Construction Co. resume dredging at Tiffin, for which their contract prices are as follows: Rock, $2.25; other materials, 29 cents per cubic yard, scow measurement.

On June 12, the amount authorized for this work was $52,083, but on August 9 last this amount was increased to the full amount appropriated, viz., $125,000.

Work was carried on from June 2 to July 21 and from August 2 to October 30, and consisted in dredging a slip 340 feet wide in front of the Grand Trunk Pacific elevator, and in dredging in the approaches thereto for a width of 400 feet to a depth of 25 feet, with the exception of some places found to be above grade during the sweeping of this area.

During this season, the dredge removed some 49,047½ cubic yards of rock and 39,787 cubic yards of other materials.

On August 11 and on August 15, authority was given to have certain dredging performed by the Canadian Dredge and Construction Co., at the wharfs of the Canada Iron Corporation in the harbour of Midland proper, at 8 cents per cubic yard, scow

measurement. Work was carried on from November 1 to November 20, and consisted in dredging in the slip from the west end of same to 215 feet east thereof with an average width of 155 feet to a depth of 20 feet below elevation 580·0 feet.

In doing above, 24,866 cubic yards other materials were removed. Only the most essential work was done, as the dredge was required at Victoria Harbour.

Total expenditure for fiscal year, 1911-12, is $107,380.30.

MITCHELL'S BAY.

Mitchell's Bay, in the County of Kent, is situated at the notheasterly corner of Lake St. Clair, and is about 32 miles by water and 16 miles by rail from the city of Chatham. Principal industry is farming and fishing; large quantity of sugar beets being grown in the district which are shipped out by scows over the bay and up the Chenal Ecarté river to Wallaceburg. Population about 100.

On January 20, 1911, authority was received to perform dredging required at this point, under contract with the Chatham Dredging and Construction Company, at the rate of 12½ cents per cubic yard, place measurement.

The work was performed between August 31 and September 19, 1911, and consisted in the dredging of a channel 1,840 feet long and 50 feet wide, to a depth of 7 feet below L.W.L.

The work performed has proved of great service to farmers in the vicinity.

Total expenditure during the fiscal year, 1911-12, including inspection, $1,564.

MONTREAL RIVER.

Improvements above Latchford.

Latchford, District of Nipissing, is a town on the T. & N. O. Railway, located on the Montreal river.

At its last session, parliament granted $50,000 towards te continuance of construction of a dam at Latchford, and providing for purchase of land to be submerged, for the purpose of improving navigation to Elk Lake. A contract was originally entered into with Messrs. Sinclair & Campbell for a concrete structure, at unit prices. Work, which started in April, 1910, did not progress rapidly owing to uncontrollable circumstances.

In the spring of 1911, the cofferdams were damaged by jamming of saw-logs, &c., after concrete work had been discontinued. The original contract having been transfered to Lowrey & Goring, by order in council, July 19, 1911, the latter resumed work in August and restored the principal cofferdam. Work was again stopped November 29 and has not been resumed. The dam is roughly, 50 per cent completed.

Expenditure on construction to March 31, $15,543.13.

Flat Rapids.

At its last session, parliament granted $3,000 towards continuation of the removal of boulders at Flat Rapids, for the improvement of navigation above Latchford.

No excavation was done during the last year but all materials and plant necessary for work, next summer, have been bought and properly stored on the site.

Expenditure to March 31, 1912, $382.34.

MOSQUITO BAY.

Mosquito Bay, Prince Edward county, is located on the shore of the Bay of Quinté, about 9½ miles by road north of Picton. There is a wharf and elevator located on lot 54, concession 1, township of Sophiasburg.

On May 5, authority was given to have the departmental dredge *No. 5* perform certain dredging, for which the estimated quantity was 9,000 cubic yards.

This work was not performed as *No. 5* had to proceed to Hamilton to work at the Oliver Plow Works, where she remained until the close of the season.

NEW LISKEARD.

New Liskeard (population, 3,000), in the District of Nipissing, is located at the mouth of the Wahbi river, on Lake Timiskaming.

At its last session, Parliament voted $18,000 towards the construction of harbour improvements at this place. A contract was recently awarded to Mr. C. L. McCool, of Fort William, Que., for the construction of a pilework wharf and earth-fill approach at $8,390. Owing to lateness in the season, work has been postponed to the coming summer.

The structure, when completed, will consist of a landing head 60 feet wide, 202 feet frontage, with pilework approach, 33 feet wide and 63 feet long, and earth approach roadway 24 feet wide on top, 585 feet long, to Whitewood avenue. The deck of dock will stand 4 or 5 feet above R.W.S. of Lake Timiskaming.

The only expenditure against the appropriation is the purchase of the wharf site property and right-of-way from K. Farah, and the Timiskaming Navigation Co.'s old wharf.

Expenditure to March 31, 1912, is $3,419.85.

NIGGER ISLAND.

Nigger Island is situated in the Bay of Quinté, about 3 miles from Trenton. A lighthouse is located about 1,000 feet south-west of the Island and the channel is immediately south of the lighthouse and is narrow and crooked with a rocky bottom. There is a shoal spot a short distance west from the Island which mariners claim is an obstruction to navigation.

On July 11, authority was given to have the contractors, R. Weddel Co., resume dredging, the expenditure to be limited to $8,000.

The contract prices for this work are as follows:—

Scow measurement, rock and boulders over 2 cubic yards, $3, O.M. 95 cents.

Bucket measurement, rock and boulders over 2 cubic yards, $2.50, O.M. 50 cents.

Work was carried on July 13 to 20, and during this period the dredge removed 3,315 cubic yards of rock.

As this amount did not complete the work required, an additional sum of $4,000 was authorized on July 21, but as the dredge had been removed to Toronto, this work was not performed.

The work consists in the removal of a rocky shoal in the vicinity of Nigger Island.

NORTH BAY.

North Bay (population, 10,000), Nipissing district, is an important railway centre, on the north shore of Lake Nipissing.

At its last session, Parliament granted $5,000 towards the construction of a pilework breakwater.

The proposed structure, 22 feet wide and 647 feet long, is to be built along the lines of a circular ring having an outer radius of 303 feet, and located to protect the landing head of the wharf and approaches thereto from seriously exposed quarters. The structure is to consist of pile bents thoroughly sway-braced longitudinally and

transversely both above and below the water. The sheeting is to extend from 4 feet below the R.W.S. to a height of some 8 feet above E.H.W.L.

A contract was awarded for this work at $13,900 to Ed. Conroy, December 27, 1911. Timber could not be procured in time to warrant undertaking construction so as to have work completed before movement of the ice.

Expenditure to March 31, 1912, is $135.10.

OAKVILLE.

Oakville, Halton county, is situated on the north shore of Lake Ontario, 29 miles west of Toronto. Population 1,800. It contains several mills, factories and a ship-yard. The trade of the place is local. It is a station on the Hamilton Branch of the Grand Trunk Railway.

On May 5, authority was given to have the departmental dredge *Sir Richard* perform certain dredging.

The work was carried on from August 7 to September 2, and consisted in dredging in the approaches and between the piers to a depth of 15 feet below zero.

In doing the above work, some 11,340 cubic yards were removed.

OTTAWA.

The departmental dredge *Nipissing* worked at Victoria Island June 19 to July 11 and again October 16, to November 18, making 10 cuts; four cuts 250 feet long, 30 feet wide, and six cuts 297 feet long, 30 feet wide, to a grade depth of 14 feet, in connection with proposed ship-yard and dock for Ottawa.

16,480 yards (scow measure) sawdust, old timbers and stone was removed and spoiled in deep water 2 miles downstream.

OWEN SOUND.

Owen Sound, Grey county is situated at the mouth of the Sydenham river, which flows into the head of Owen Sound which is an arm of the Georgian Bay. It is the centre of an extensive agricultural district and is the terminus of the Grand Trunk Railway branch of the Georgian Bay & Lake Erie Division and of the C. P. Ry., Toronto, Grey and Bruce division. There are several lines of steamers running regularly to and from this place.

On May 30, instructions were given to prepare contract plans and specifications for the construction of an extension to the revetment wall on the west side of the harbour.

Plans and specifications were duly prepared and forwarded to Ottawa and the work awarded to Messrs. McDowall, Green and Harrison for the sum of $36,960.

However, on October 13 last, orders were received to take no action in this matter until further orders and the contractors were notified accordingly.

It was understood from the inception of this proposal that the Corporation of the town would, when required, furnish all the land necessary to accommodate the structure and for right-of-way purposes. The design included anchor blocks of concrete placed some 60 feet back from the face of the work and connected thereto by anchor rods placed well below the surface of the ground, and it was proposed that the conveyance of a strip 60 feet wide along the water-front should be conveyed to the Department.

Subsequently, one of the parties, viz:—Mr. J. K. McLauchlan, whose property extends some 183 feet along the water-front dissented and objected to any interference with his property at least without a large compensation for alleged damage, therefore, it was decided to alter the type of construction and to design a work that could be con-

structed independent of any private property, and contract plans and specifications along these lines have been duly prepared and forwarded to the Department.

On August 5, last, authority was given to expend the sum of $2,500 in repairs to the sheet piling on the west side of the harbour, by day labour.

Work was carried on from September 16 till November 4, and consisted in the construction of anchorage support, consisting of concrete blocks 3½ by 5½ by 2 feet placed 40 feet in rear of the piling and at the centres and connected to new lower waling placed below low water level and screw bolted to piling by anchor rods encased in concrete 1½ inches in diameter with upset threads and provided with turnbuckles. Considerable trenching and excavating was necessary to properly place the anchor rods and anchor blocks. The total length of work renewed was 160 feet. The damaged waling was also removed.

In doing the above work, some 15 turnbuckles, 10 cubic yards stone, 18 cubic yards gravel, 24 barrels of cement, 3,076 feet B.M. hemlock, 2,240 feet B.M. elm, 500 feet B.M. beech and 2,119 lbs. iron were used.

Total expenditure for fiscal year, 1911-12, is $1,679.39.

PARRY SOUND.

Parry Sound, District of Parry Sound, is situated on the east shore of the Georgian Bay. It is a very popular summer resort, and is a station on the C.P.Ry., G.T.Ry. and C.N.Ry.

On March 24, 1911, authority was given to remove 35,000 cubic yards alongside the Government wharf, the work to be performed by the C. S. Boone Co. at 25 cents per cubic yard, scow measurement.

Work was carried on from May 22 to 25, and some 1,012 cubic yards of sand, loose rock and sawdust were removed.

It was found that the material was principally sawdust, which, when disturbed, simply floated away.

PELEE ISLAND.

Pelee Island is situated on the western end of Lake Erie in latitude 41° 46′ N., longitude 28° 45′ W., about 35 miles south-east from the mouth of the Detroit river, and 16 miles south of the town of Kingsville, Essex county. Population of the island about 650. Its products are grapes, wine, fruit, tobacco and farm produce. The soil is particularly rich and fertile. A large number of hogs are raised. Owing to the isolated position of this territory, the docks of this island are of great importance and service to the inhabitants. For some years past, a regular line of steamers has called between three and four times a week at these docks when weather permitted. It is a port of entry, and the revenue is steadily increasing. The draught of vessels using these docks is 10 feet.

North Dock.

On October 24, 1910, a contract was awarded to Mr. D. MacDermid, of Toronto, for the sum of $13,000. This contract provided for the extension of 150 feet to the existing work.

Work was in progress at the beginning of the fiscal year, and was completed on May 26 last.

The work consisted of close-faced crib-work, 40 feet wide, with a continuous superstructure of timber decking, the whole filled with suitable stone ballast. The work was successfully constructed in every way, and has proved itself of great use to the people residing in the vicinity.

On December 21 last, authority was received to expend $500 on repairs to this landing dock.

Work was performed between February 1 and March 30 last, and consisted of the construction of a 30-foot extension to warehouse, the repairing of the older portion of the warehouse and slight repairs to the dock. This warehouse is now 60 feet long, with an office adjoining, 10 feet by 14 feet in size.

In the execution of this work, some 7,500 feet B.M. of hemlock and pine timber, 167 lbs. of iron, &c., were used.

The completion of this work left the dock in very fair condition.

West Dock.

On December 21 last, authority was received to expend $500 in making repairs required to this dock and warehouse.

Work was performed between February 12 and March 30 last, and consisted in making general repairs to warehouse and renewal of 230 feet of face timbers, together with the driving of a few piles; in addition, the approach to dock was levelled up with stone and gravel.

In the execution of the above work, 400 feet B.M. of pine timber, 50 loads of stone and gravel, 424 lbs. of iron, &c., were used.

Total expenditure during the fiscal year 1911-12, was $9,631.67.

PEMBROKE.

Pembroke, population 9,000, County of North Renfrew, is on the south shore of Allumette lake. It is an important station on the Canadian Pacific Railway and Grand Trunk Railway, 104 miles west of Ottawa.

At its last session, Parliament granted $3,500 towards the replanking of the flooring of the dock. Repairs, which started March 1, had not all been completed March 31. The status of work at this date was as follows: 1,342 lineal feet of approach, 16 feet wide, and 440 lineal feet of landing head, 50 feet wide, had been replanked, there being 160 feet of landing head, 50 feet wide, to be replanked. The new flooring was laid on 2-inch plank strips, which were placed at about 4-foot centres over the floor stringers. 111,000 feet B.M. of 3-inch lumber was laid.

Smaller repairs, which consisted in renewing broken planks, occasionally during the summer, were attended to.

Expenditure to March 31, 1912, is $3,143.38.

PENETANGUISHENE

Penetanguishene, Simcoe county, is a town of some 3,000 inhabitants, situated on the north-west peninsula of the Georgian Bay, between Nottawasaga Bay and Severn river, 40 miles north-west of Barrie. It is the terminus of a branch of the G.T.Ry., and a large quantity of lumber is shipped from the place. It contains one of the largest tanneries in the Dominion and there are a box factory, a stove foundry, a number of saw mills and other industries. It is a popular summer resort.

On May 17, authority was given to perform certain dredgings for which a contract was awarded to the R. Weddell Co., at 12 cents per cubic yard, place measurement.

Work was carried on from June 5 to August 31, and consisted in dredging a channel 200 feet wide for 1,450 feet out from the north-west corner of the Firstbrook wharf, also at the easterly side of this channel, and at the northerly side of the wharf, a turning basin was excavated 600 feet wide at channel end and 300 feet wide at the lower or easterly end, having a length of 575 feet all to a depth of 14 feet below an elevation of 580 feet.

Also dredging a channel at the works of the Dominion Stove & Foundry Co., 50 feet wide and 500 feet long to a depth of 20 feet below an elevation of 580.

In doing the above works, some 75,086 cubic yards, in situ, were removed.

Total expenditure for fiscal year 1911-12, is $9,510.32, of which $9,010.32 was for dredging.

PETEWAWA.

Petewawa, North Renfrew county, is on the south shore of the Ottawa river, 10 miles above Pembroke.

Parliament voted $4,500 towards the improvement of pilework wharf built some years ago, owing to encroachment of sand bar on log channel, &c.

The improvements to the public wharf consist in: building a landing head, 40 by 100 feet; lengthening pilework approach, 20 feet wide, 60 feet; shifting 43-foot span wooden bridge, at outer end of present wharf approach a distance of 60 feet to a similar position in the improved structure; a one-story freight-shed shelter, 18 by 18 feet; replanking the present wharf approach, 20 feet wide, over a length of 312½ feet, including the bridge; removing the old pilework landing head completely, above the river bed. A contract for this work was awarded to Mr. C. L. McCool, of Fort William, Que., for the sum of $3,290.

Work started February 25; on March 31, all the pile bents, bracing and part of stringers were placed, the bridge shifted and the old landing head razed. The structure will be completed for the opening of navigation.

PICNIC ISLAND.

Picnic Island, Manitoulin Island, District of Algoma, is situated about 1½ miles west of Little Current on the main steamboat channel from Little Current to Sault Ste. Marie. Two saw-mills are located on this island, and the population varies from 50 to 300, according to, whether or not, the mills are in operation.

On June 16, authority was given to instruct the contractors, the C. S. Boone Co., to resume dredging at the following rate per cubic yard, scow measurement: rock, $1.75.

Work was carried on from May 25 to July 17 and from August 8 to October 20, and consists in dredging a channel 300 feet in width and about 1,100 feet in length to a depth of 22 feet below elevation of 580.

During this season, the dredge removed some 37,495 cubic yards of rock.

On September 7 last, authority was given to remove 140,000 cubic yards of rock at $1.70 per cubic yard scow measurement, as a continuation of the original contract with the C. S. Boone Co.

This work will consist in the removal of three shoals lying between the channel at Little Current and that being constructed at Picnic Island. Drilling was commenced on these areas.

Total expenditure for fiscal year, 1911-12, is $60,993.82.

POINT EDWARD.

Point Edward is a village situated at the head of, and on the easterly side of the St. Clair river, in the County of Lambton, adjoining the town of Sarnia, and is 61 miles west of London.

On April 27, 1910, an Order in Council was passed granting the Cadwell Sand & Gravel Company, of Windsor, Ontario, the exclusive privilege to dredge the material required to be removed, in order to maintain a sufficient depth of water opposite the docks at Point Edward, on the condition that the said company be allowed to dispose of the dredged material for its own purposes.

Operations commenced on April 19, and were continued until December 8 last, when work closed down for the winter. During this time, some 136½ cargoes of sand and gravel were removed. The action of the currents has been such that no difficulty has been experienced in maintaining the depth required. On the other hand, considerable erosion appears to have occurred over the area in question.

PORT ARTHUR.

Port Arthur, a city of 14,000 inhabitants, is situated on the west shore of Lake Superior, 2 miles north of the Kaministiquia river, District of Thunder Bay. It is on the main line of the Canadian Pacific Railway and is the lake terminus of the Canadian Northern Railway. The following are some of the chief industries that give it importance as a shipping port.

The Canadian Northern elevators—capacity 7,000,000 bushels.
The Thunder Bay, King's and National elevators.
The Pigeon River Lumber Company's plant, capacity 30,000,000 feet per annum.
The Atikokan Iron Company.
The Canadian Northern coal and ore dock, capable of handling 700,000 tons.
The Western Dry Dock and Ship Building plant.
The Port Arthur Wagon Works.
Stewart & Hewitson's quarries.

Port Arthur is also the centre of a large lumbering industry, many ties and piles, and much pulp-wood being cut annually.

The traffic for 1911-12, shows a large increase over the year previous, as follows:—
The customs receipts for 1911-12, were $915,513.74.
The customs receipts for 1910-11, were $485,113.57.

The grain shipments for 1911-12, were 39,768,163 bushels, by vessels, and 3,173,116 bushels by rail.

The grain shipments for 1910-11, were 31,799,160 bushels.
The coal discharged during 1911-12, was 957,486 tons.
The coal discharged during 1910-11, was 600,000 tons.
The number of vessels arriving inward was 1,778 and the tonnage 3,842,444 tons.

Dredging.

The entrance channel to the Thunder Bay elevator had one cut taken along the south side, and is now complete with the exception of a small tract of slate rock, approximately 10,000 cubic yards.

Width of channel 500 feet, and depth 25 feet. Material, clay and sand.

The channel between the Thunder Bay elevator and the main harbour was widened throughout its entire length with the exception of a small strip at the north-eastern corner, and a portion was re-dredged. While doing this work, the dredge also removed the temporary pile breakwater in front of the Canadian Northern coal dock, 12,861 cubic yards of clay being taken out at the same time. Removing this breakwater was paid for at a fixed price per hour. Width of channel 585 feet, depth of new dredging 25 feet. Material, clay.

The channel to King's elevator was widened one cut, 1,900 feet, and shoal portions were re-dredged. Width of channel 330 feet, depth 22 feet. Material, clay.

The Thunder Bay elevator, King's elevator, C.N.Ry. and C.P.Ry. slips were re-dredged, as filling in had taken place. Depth 20 feet. Material, clay and sand.

The *Kennaquhair,* the dredge employed on the contract, started work on May 2, and was laid up for the season November 21, 1911.

MAIN HARBOUR.

Locality.	Quantity Removed Cubic Yards, Scow Measurement.	Unit Price.	Total Cost.
		$ cts.	$ cts.
King's Elevator channel	45,188	0 13	5,874 44
Thunder Bay Elevator channel	104,180	0 13	13,543 40
C. N. R. & Fish dock slip	9,708	0 13	1,262 04
Widening coal dock channel	323,520	0 13	42,057 60
C. P. R. slip	6,687	51 hours @ 20 00 per hour	1,020 00
Removing temporary pile breakwater at coal dock	12,861	117¼ hrs. @ 32 00	3,752 00
Extras in connection with removal of above breakwater			274 97
Inspector's Salary			720 00
Total Expenditure for 1911–12			68,504 45

SUMMARY.

Locality.	Quantity Removed Cubic Yards, Scow Measurement.	Unit Price.	Total Cost.
		Cts.	$ cts.
Dry Dock Entrance Channel—			
Earth	8,935	12	1,072 20
Earth, cast over	313	8	25 04
Boulders over 2 cubic yards	43½	60	26 10
Slip along Revetment Wall at Dry Dock—			
Earth	31,617	12	3,794 04
Estimate for Dec. 1910, and Jan. 1911, not forwarded until Oct. 1911			631 00
Inspector's Salary			264 00
Total Expenditure for 1911–12			5,812 38

Western Dry Dock.

Some dredging was done inside the coffer dam at the western dry dock, the dredge *No. 1* working from June 5 to June 21, 1911.

On September 27, 1911, this contract was extended to permit of dredging a slip along the revetment wall of said company.

Dredge *No. 1* worked from October 4 to November 21, 1911.

Dredge *No. 15* worked from November 13 to November 16, 1911.

Depth, 17 feet. Material, clay, hardpan and boulders.

New Breakwater.

The two outer cribs and headblock which had already settled and been adjusted by special footing blocks, settled again in August, 1910, and more extra work was necessary before they could be completed. This extra work, to the amount of $34,625, was authorized by Order in Council dated November 11, 1910.

Permission to recommence this work was given by telegram May 11, 1911, and work was started on May 15.

A double row of piling was driven around these two sunken cribs and the headblock, a waling piece was bolted on and the whole fastened from side to side by tie rods 5 feet apart. The space between the piles was then filled with small stone and the remaining concrete superstructure put on.

Rip-rap was then placed along the outer face of these cribs until the sum appropriated for the extra work was exhausted.

This contract also called for the removal of the south 1,500 feet of the old breakwater.

The remaining portion of this, namely, the south headblock, was removed during June and July, and the exposed end made secure.

The work was completed October 12, 1911, and the final estimate put in December 12, 1911.

Bare Point Breakwater.

Work was commenced on this breakwater at both ends. At the outer end, the stone was dumped from scows, the first load being put in on September 12 and the last on November 10, 1911. Piles were driven along the centre line and transversely in the form of bents, so that the scows could be properly aligned.

The stone was placed almost altogether around these bents to try and protect them from the ice. The ice, however, has carried them away and they will need to be replaced.

At the shore end, a trestle was built and the stone dumped from cars. The first car was unloaded on October 2 and the last on November 22, 1911.

Some 24,000 tons of stone were replaced.

Total expenditure for fiscal year 1911-12, $169,094.06, of which $83,942.52 was for dredging.

PORT BRUCE.

Port Bruce is a village, situated at the mouth of Codfish creek, in the County of Elgin, on the north shore of Lake Erie, and about 5 miles south of Aylmer. Population about 150. Surrounding country is a rich farming district. Principal industry is fishing, in the pursuance of which it ranks as an important place.

On July 16, 1910, an agreement was made with Mr. J. H. Smale, of Port Burwell, whereby he undertook, for the sum of $2,900, to supply all necessary labour and material for the construction of an extension of 92 feet to the outer end of west pier, said extension being 20 feet wide, reaching to a height of 6 feet above L.W.L., and composed of close-faced crib-work filled with stone ballast.

The work was in progress at the beginning of the fiscal year, and owing to the unsatisfactory progress being made, the work was taken off Mr. Smale's hands on the 6th September, 1911, in an uncompleted condition, he being paid the sum of $2,620.02 for the work which he had performed to that date.

At the last two sessions of Parliament, the sum of $3,400 was voted towards extension of west pier, and general repairs to both piers. On June 6, authority was received to expend five-twelfths of the total vote, and on December 21 following, further authority was received to expend an additional $1,983.34, or the remainder of the total vote.

The season was then too far advanced to take advantage of the latter grant, so that the repairs to piers and the completion of the extension of west pier remained unattended to at the end of the fiscal year.

The work performed consisted of the construction of the 92-foot extension to west pier above described, except the decking and stone filling, said filling being only per-

formed to a level of one foot below water level. This work, however, has wintered safely, and will be completed during the coming season.

Total expenditure, including inspection, $2,126.27.

PORT BURWELL.

Port Burwell is an unincorporated village of about 500 inhabitants, situated on the north shore of Lake Erie, in the southeasterly corner of the County of Elgin, being 51 miles directly north across the lake from Ashtabula, Ohio, U.S.A., from which place an extensive traffic in coal is conducted.

Tillsonburg is a town 16 miles northerly, to where the coal is taken to be either stored or distributed.

The customs revenue collected is as follows:—

Ingersoll, chief port of district, collection	$ 53,059 15
Port Burwell, out port	118,267 52
Total	$171,326 67

Exclusive of coal-ferry and contractor's vessels, for breakwater, which were large and numerous, 11 vessels arrived, of 503 tons, with crews of 68; 11 vessels departed, of 583 tons, with crews of 75 men.

Breakwater.

An Order in Council was passed on February 8, 1911, authorizing the acceptance of a tender submitted by Mr. M. J. Hogan, Montreal, Que., for the construction of a breakwater, to protect the entrance channel to Port Burwell harbour, at a cost of $157,500.

The breakwater was to be 1,200 feet long 30 feet wide, and varying in depth from 23 to 25 feet below, and 8 feet above low-water level; with crib-work sub-structure and concrete superstructure.

A trench varying from 5 to 12 feet deep had to be dredged for the berths of the cribs.

Materials, for the above, commenced to arrive on March 24 and the necessary plant on May 5; after preliminary preparations had been made, the first timbers for the first crib were laid on May 12.

Materials continued to arrive in a very satisfactory manner and the work was pushed with energy, until, September 15, when the works were closed down for the season, on account of the uncertainty of what the weather might be like at that season of the year, on Lake Erie, which being comparatively shallow, is subject to sudden changes of a severe nature thereby subjecting construction on the open water to great risk.

The construction of cribs was started on a tiltable cradle on shore, and after being built to the height of six courses, with floors and vertical posts, they were launched and completed to their full height; permission having been given, that two cribs 100 feet long each, might be joined and completed as one crib of 200 feet length.

All the cribs that were built, were joined as just described with the exception of the first crib, which was built and placed separately in its berth on July 21; but on the night of July 23 a severe storm from the S.W. with a velocity of 72 miles an hour, sprang up, lasting till the morning of the 26th, by which time crib No. 1 had been severely damaged and partially washed away to the extent of 20 feet at southerly end for the total height and from 40 to 45 feet, for a depth of from 8 to 9 feet at the northerly end. At the time the storm sprang up, the crib was about a third full of stone, but the stone was in the centre pockets, the cement blocks being on timbers across the tops of the end pockets and were gradually worked off.

The blocks were 10 by 4 by 2½ feet and weighed approximately 7 tons each.

It was considered expedient to leave this damaged crib as it was for the present, and to proceed with laying as many of the other cribs (10) that were built as was possible in order to free the harbour of floating cribs and to protect the entrance channel as far out into the lake as could be done, before closing down the work for the season.

Eight hundred feet of cribbing independent of the broken crib were placed and anchored, protected with talus stone at the storm side and on top, before the work closed down temporarily.

No superstructure was placed on the submerged cribs, but 64 concrete blocks 10 by 4 by 2½ feet, and 88 blocks 20 by 4 by 2½ feet were made, ready to place next spring.

In order to protect the smaller stone filling of cribs from being washed away, as there was no superstructure, the whole of the cribs were heavily covered with large dimension stone, varying from 3 to 14 tons each; being part of the talus stone, required for this protection of the remainder of the cribs yet to be placed.

As the Government dredge *Quebec* was working at Port Burwell during the time the cribs were being placed and anchored, the material, sand and clay but principally the latter, was dumped on the west side of cribs, to fill the slope of the trench of berths to original level, and thereby leave less of the face of cribs exposed to the storms, and make the talus stones of more avail, being higher up on the face.

Several days were occupied by Mr. Hogan's dredging plants, apart from the actual contract work, to deepen the entrance channel across which a shoal had formed, leaving only from 14 to 15 feet of water. This not only made it possible for Mr. Hogan to tow his cribs out to their final position but permitted the car-ferry *Ashtabula* to enter port with a load, which otherwise she could not have done.

On September 11, the Government dredge *Quebec* spent seven hours overcasting stone into the last crib set; as the weather looked so threatening and there was danger that the crib might meet the same fate as the first. A storm did actually come up the next morning but there being enough ballast in the crib, no damage was done.

The cribs are not perfectly level, some points will have to be slightly cut down, and others built up, to give a level even bed for the concrete blocks of superstructure.

It was thought advisable to leave this levelling-off over till the spring after the cribs had stood the buffeting of the fall and spring storms and taken a final settlement.

Only one estimate was returned for the whole work to date, on September 15, amounting to total net sum of $72,202.50.

Dredging.

The Government dredge *Quebec,* which wintered at Port Burwell, commenced work on March 21, and continued digging in the entrance channel until May 19, and then left for Port Stanley, having removed 53,080 cubic yards of silt and clay, but principally the former.

An August 9, the same dredge having returned to this port, commenced working again and continued, weather permitting, until September 7, and removed a still further amount of 54,420 cubic yards of silt and clay from the entrance channel.

On account of the frequent storms, the channel had again become so shoaly in places 14 to 15 feet just before and especially after the severe storms of July 24, at which time the first placed crib for the new breakwater was greatly damaged, that Mr. Hogan, the contractor, worked for several days digging with his own plant, to relieve the situation and allow of the 200-foot cribs to be towed out to their berths for the breakwater.

The experience of taking the first 100-foot crib out, with the aid of two dredges, two tugs and a 15-ton derrick-scow on July 21, had been sufficient to demonstrate that

a crib 200 feet long, could not be taken out, until the channel was deepened. Therefore, Mr. Hogan's dredge started at the channel, at his own dictation, on July 22, and worked 53 hours, both day and night on and up to July 28, removing approximately 4,500 cubic yards.

This work not only assisted the progress of the breakwater contract, but relieved the situation regarding the coal-ferry traffic; as otherwise, the ferry would not have been able to continue her trips with a full load, without the greatest difficulty and danger, especially during the time of storm on the lake.

Assistance was exchanged several times, in the way of tugs, &c., between the Government plant and that of the contractor, and on September 11, the dredge *Quebec* put in seven hours overcasting stone into the last crib set, as the weather looked threatening and it was desirous to insure this crib against meeting the same fate as the first.

On account of the shoaling of the channel, the dredge *Quebec* again returned here on the October 1, and started working in the channel on the 5th; however, as there were fall storms to contend with, the dredge could not always work outside the harbour, therefore put in the time on such occasions in clearing out the turning-basin and channel between the piers, although for many days no digging could be done, it being too rough on the lake for the tug *Peel* to take the scows out to be dumped.

Work finally closed down on December 28, a third quantity of material, amounting to 92,040 cubic yards, having been dug, or a total quantity of 199,540 cubic yards by the *Quebec* and 4,500 cubic yards by Mr. Hogan's dredge *Isobel.*

At many points throughout the entrance channel, dredging had to be done from three to four times.

Complaints were made several times, by the master of the car-ferry, of shoals and obstructions being met with in the channel, most of which were incorrect reports.

Repairs.

Authority was given on September 23 to expend $10 on repairing the decking of the piers, as the decking-joists which were of second-growth white pine 4 by 6 inches, had given out, thereby allowing the planking to settle and break, endangering the small stone filling of the crib-work to being washed away by the fall storms.

Subsequently, on October 9, a further expenditure of $95 was authorized to repair the south-west corner of the east pier, which had been broken by the car-ferry *Ashtabula,* she having been driven against it during a severe storm, with wind at 50 miles an hour, on the night of October 4.

The storm from the south-west caused a strong current to flow through the space between the pier and the breakwater, which was evidently not anticipated by the master of the ferry.

The pier was damaged to the extent of having five courses of the superstructure broken for a length of from 10 to 12 feet along both faces, including planking, joist, face-corner-sheeting and iron straps and one cross-tie.

The repairs were commenced on November 1 and were completed on the 30th of the same month, at a cost of $146.20.

In concluding the remarks about repairs, I wish to draw special attention to the decayed and dilapidated condition of the superstructure of both piers. They are so far gone that when making repairs it is difficult to determine where to commence and where to leave off, or where to get solid wood to spike to.

The total expenditure at Port Burwell for the fiscal year 1911-12, is $61.244.77, of which $11,297.17 was for dredging.

PORT COLBORNE.

Port Colborne, Welland county, is situated on the north shore of Lake Erie, about 20 miles west of the city of Buffalo. It is the terminus on Lake Erie of the Welland canal, and as such is a port of great importance in connection with the transportation of grain and other freight from the West to St. Lawrence ports.

On June 6, 1910, authority was given to make certain repairs to the headblock of the eastern breakwater.

On September 24, 1910, an agreement was entered into with Mr. M. J. Hogan to perform the work for the sum of $4,139.

The work consisted in the construction of a crib of square timbers 20 by 50 feet as substructure for the concrete superstructure, placed on the harbour side of the damaged headblock as reinforcement.

By authority received on July 31, certain immediate repairs to the damaged headblock were authorized.

This was duly performed by Mr. Hogan at a cost of $113.55, and consisted in placing large blocks of stone and concrete on the injured headblock to prevent, as far as possible, further damage until permanent repairs can be proceeded with.

Total expenditure for fiscal year 1911-12, is $2,904.12.

PORT ELGIN.

Port Elgin is a harbour of refuge, situated on the east shore of Lake Huron, in the County of Bruce, 5 miles south of Southampton, and 56 miles north of Kincardine, on the Wingham, Grey & Bruce division of the Grand Trunk Railway. Population about 1,600. The principal exports are lumber, tanbark and brick; while salt, cord-wood and general merchandise is brought in. The Grand Trunk Railway have constructed a spur line from the station to the pier. The maximum draught of vessels entering this port is 14 feet at low stage of water.

At the last two sessions of Parliament the sum of $5,300 was voted for the renewal of landing dock, and construction of groyne on southerly side of harbour. On June 24, 1911, authority was received to expend on this work $2,208.33, and on December 21 last further authority was received to expend an additional amount of $3,091.67.

Operations were commenced on July 3 and continued until December 13 following, when work was suspended owing to the grant being exhausted. Operations were again resumed on February 7 last, and were in progress at the end of the fiscal year. Owing to the late date at which the seven-twelfths of the vote was available, it was found impossible to expend this later grant, and the work proposed was consequently not completed. This refers particularly to the construction of the groyne, a large portion of the material required for the completion of it being on hand, awaiting grant to provide necessary labour.

The work performed between dates above mentioned, consisted of the completion of the renewal of 123 feet of landing pier, together with the approach to same. The former consisted of close-faced crib-work filled with stone ballast, which was stripped to a height of 12 inches below L.W.L., and the superstructure renewed with a design of concrete face walls and stone filling between. A surfacing of gravel was provided and the whole work now presents a very fair appearance.

A groyne was partly constructed, extending outwards from the shore line approximately 120 feet, south of the landing pier above mentioned. The portion completed consists of stone, built to approximately 4 feet above water level and 120 feet long with a width of approximately 6 feet on top. The intention is to extend this groyne a distance of 180 feet, when money is available to perform the work. This extension will consist of open-faced cribwork filled with stone ballast. The purpose

of this groyne is to intercept the littoral drift, which, during certain storms, works towards the harbour in large quantities, and fills up the dredged entrance channel.

In the execution of the above work, some 22,000 f. B.M. of hemlock, 90 cords of stone, 2,000 lbs. of iron, 110 barrels of cement, &c., were used.

The total expenditure during the fiscal year of 1911-12 was $10,113.94, of which $6,249.36 is for dredging.

Dredging.

Work was commenced on May 22, completed on December 1, and consisted in dredging the harbour to a depth of 14 feet below low water level. The quantity of material removed was 33·687 cubic yards at a cost of 17½ cents per yard; the work was executed by the Dredging & Drainage Company.

PORT FINDLAY.

Port Findlay, District of Algoma, is situated on the north shore of Luke Huron about 5 miles below the entrance to St. Mary's river, and 30 miles southeast of Sault Ste. Marie.

A warehouse 53 by 16 feet 6 inches has been built at the west side and shore end of the wharf.

Total expenditure for fiscal year, 1911-12, is $91.40.

PORT HOPE.

Port Hope, Durham county, is situated on the north shore of Lake Ontario, 63 miles east of Toronto, on the G.T.Ry. The chief trade is in lumber and grain. It has a number of important industries. Population 5,000.

On August 5, authority was given to make repairs to piers and superstructure of counterfort, by day labour.

Work was commenced August 28, and carried on till November 30, and consisted in repairing the southerly side or front of the wharf at the works of the Standard Ideal Co., for the full width thereof, 85 feet by 6 feet in height, extending to one foot below zero of gauge. On the west side of the same structure, the decking, snubbing posts and face timbers, where necessary, were renewed.

On December 21, authority was given for the expenditure of the balance of the appropriation, but owing to the advanced stage of the winter the work was not resumed.

On October 6, authority was given to perform certain dredging, for which a contract was awarded to the R. Weddell Co. at $24½c. per yard.

This work was carried on from October 12 to December 21, and consisted in dredging between the piers over an area of some 200,000 square feet to a depth of 16 feet below zero.

In doing this work, some 31,562 cubic yards were removed.

Total expenditure for fiscal year 1911-12, is $9,890.06, of which $7,850.83 is for dredging.

PORT ROWAN.

Port Rowan, in the County of Norfolk, is situated on the north shore of Lake Erie, in the inner bay of Long Point, and is 21 miles from the town of Simcoe. Population about 1,000. It is a port of entry, a favourite summer resort and a considerable amount of fish is shipped over the dock. A large number of launches and light draught tugs utilize these piers continually, more particularly during the summer

season, and it is a harbour of refuge for crafts of this character. Customs duties collected at this point, during the fiscal year, amounted to $695.70.

At the last two sessions of Parliament, a sum of $7,000 was voted for repairs and renewals to landing pier. On August 5, 1911, authority was received to expend five-twelfths of the vote, or $2,916.66, which amount was increased on December 21 by $4,083.34.

Operations were commenced on August 17 and continued until November 9 last, when work closed down for the winter.

Operations were again resumed on January 11 and continued until February 22, 1912. when, owing to adverse weather conditions, work had to be closed down until the opening of navigation.

The work performed consisted of the reconstruction of 197 feet of pier, and included the construction of 15 concrete piers, 16 feet long, 2 feet wide and 5 feet high, partly supported by pile foundation, and the construction of timber decking for the 197 feet mentioned, with the exception of wheel guards.

Foundation piles were driven for seven additional piers, and general repairs made to pier.

In the execution of the above work, some 30,996 feet B.M. of maple, beech and pine timber; 150 brls. of cement, and 1,274 lbs. of iron, &c., were used.

Total expenditure for the fiscal year 1911-12 was $3,863.01.

PORT STANLEY.

Port Stanley is an important harbour of refuge, situated on the north shore of Lake Erie, at the mouth of Kettle Creek, in the County of Elgin, 8½ miles by rail south of the city of St. Thomas, and 23½ miles south of the city of London. It is the terminus of the Père Marquette Railway, and of the London & Lake Erie Railway and Transportation Company. It is a favourite summer resort. Population about 750, which is largely increased during the summer months.

Maximum draught of vessels entering this harbour is about 18 feet.

During the past fiscal year, 501 vessels entered this port with a tonnage of 940,542 tons, while 480 vessels departed with a tonnage of 686,225 tons.

In addition to the materials already mentioned, imports consist of timber, ties, fence posts and general merchandise.

At the last two sessions of Parliament. a vote of $60,000 was passed for harbour improvements, and on April 8, 1911, and June 14 following, the amounts of $625 and $300 respectively were authorized for urgent repairs required to piers. On August 11 following, an additional expenditure of $9,855 was authorized towards the renewal of a portion of the west pier and the repairing of damage which had occurred to the outer end of this pier.

Repairs to Pier.

Operations were in progress at the beginning of the fiscal year, and were carried on until April 29 following, when work was suspended. It was again resumed on July 4 last, and was still in progress at the end of the fiscal year.

The work performed consisted of the placing of concrete deck on 190 feet of the west pier, which had, with this exception, been constructed the previous year; the removal of 190 feet of west pier, and driving of the foundation piles required for the reconstruction of this 190 feet; outer end of west pier generally repaired by driving of oak piles at 10 feet centres, and the filling in between said piles with 12 by 12 timber, the whole being fastened back securely into the work. At the end of the east pier, repairing by driving of pile protection work, consisting of oak piles, 30 feet

long, securely fastened to body of pier; 2 mooring posts were renewed, and other general repairs to decking of both piers were made.

In the execution of this work some 6,644 lineal feet of piling, 14,352 lbs. of iron, 14,645 feet B.M. of timber, and 200 brls. of cement, gravel, &c., were used.

Dredging.

Under authority received on May 18, 1911, the Government dredge *Quebec* commenced operations of dredging at Port Stanley and ceased work on completion of the work authorized September 30, 1911.

The work done consisted in the removal of 115,180 cubic yards, scow measurement, of sand, gravel and clay from the inner harbour and inside the outer entrance to piers, and over a considerable area outside of the said piers; the depth dredged ranged from 22 feet below L.W.L. in the inner harbour to 26 feet in the outer harbour.

Breakwater.

On October 30, 1911, a contract was awarded to Mr. M. J. Hogan, of Port Colborne, for the sum of $210,376 for the construction of a breakwater 1,200 feet long, to protect entrance to this harbour from the south-east. The work is to be of a permanent nature, being composed of a substructure of close-faced crib-work, filled with stone ballast, and a superstructure of mass concrete. The contractor is now engaged in delivering material on site of work, to begin active operations.

The total expenditure for the fiscal year 1911-12, was $16,229.03, of which $7,633.23 is for dredging.

PROVIDENCE BAY.

Providence Bay, District of Algoma, is situated on the south shore of Manitoulin Island, Lake Huron, about 12 miles northwest of Michael's Bay, 30 miles by road from Manitowaning and 35 miles from Gore Bay. Population 300. It has a large saw-mill; is a fishing station of considerable importance and is one of the principal ports on the island at which all local steamers call.

On June 16, authority was given to expend the sum of $10,000 in the construction of a wharf, for which a contract was awarded to Mr. C. H. Sherwood for the sum of $15,438.

Work was commenced May 29 and carried on till July 24.

On July 24 last, a terrific storm occurred which caused the first crib, which had been built, placed in position and filled with stone, to settle.

The contractor asked to be relieved of the work, but the Department was of the opinion that his request could not be acceded to, but the matter is still in abeyance and no further work has been done. The work done prior to the storm was of a satisfactory character.

In this connection, I may state that a petition has been made to the Department asking that work on this wharf be discontinued and that a new location be selected at another point in the harbour, but this matter has not yet been fully looked into.

On August 5, authority was given to construct a warehouse on a stone embankment protected by cribwork.

This work was not proceeded with as it should be constructed simultaneously with the wharf extension.

The expenditure for fiscal year 1911-12, is $206.91.

PUCE.

Puce is a village, situated on the south shore of Lake St. Clair, on the London and Windsor line of the Grand Trunk Railway, 13 miles east of Windsor, and 32 miles west of Chatham. Population about 200.

On September 1, 1911, authority was received to expend the sum of $375 in making urgent repairs required to sheet piling.

Work was performed between September 4, and October 26, 1911, and consisted of the construction of 40 feet extension to inner end of sheet piling on east side of the harbour; the renewal of 10 feet of sheet piling on west side of harbour; the driving of four clusters of guard piles at outer end of sheet piling, and in general repairs.

In the performance of the above work some 2,500 feet B.M. of 3-inch oak, 335 lineal feet of piling and 200 lbs. of iron were used.

This work is now in good condition.

Total expenditure for the fiscal year 1911-12 was $375.

RAINY RIVER.

Rainy River forms the boundary line between Ontario and Minnesota and runs from Rainy lake into the Lake of the Woods where it forms two outlets, one past Oak Point, which is the main channel but has not been used of late owing to its filling up and being difficult to keep open without protection work, and the other—the back or towing channel, extending northerly between the Sand Hills (Sable island) for a distance of about 5½ miles. This channel is used by tugs in taking rafts out of the river, as it affords shelter from the winds. Mr. A. F. Bowman of Southampton had the contract for dredging at 27 cents per cubic yard, and commenced work on May 16. The dredging was done in three places, known respectively as sections A, B and C, where the water was shoal and where dredging was done to give a depth of 10 feet below the water level which stood practically at 2·0 feet below the zero of the water gauge all summer. The channel dredged at section B, near Burton island, was 3,600 feet long averaging 175 feet wide and 12 feet below zero of gauge, giving 10 feet of water. The amount of clay and sand moved was 78,778 cubic yards, scow measurement.

At section A, known as Grassy Portage, it was necessary, on account of the lowness of the water to dredge a channel between the Grassy Portage and Sable island for a distance of 2,300 feet, 60 feet wide and 10 feet deep, including 30,297 cubic yards of sand and mud.

At section C, near the lighthouse, 22,970 cubic yards of sand and mud was dredged, making a total for the three sections of 132,015 cubic yards. Dredging ceased October 7.

During the month of March, a survey was made on the ice and soundings taken of the section dredged.

The total expenditure for the fiscal year is $63,181.35.

Ash Rapids.

An examination and survey of Ash Rapids was made on August 3. The rapids are short and contracted and are known as the Upper and Lower rapids, being separated by Lock Lake, which is 1,600 feet long. The difference in the elevation of the Lake of the Woods and Lock lake is 0·30 of a foot and between Lock lake and Shoal lake 0·90 of a foot. The water flows back and forth from the Lake of the Woods to Shoal lake depending upon the way the wind blows. Owing to the extreme lowness of the water, navigation is very difficult at present as the water is only 1½ feet deep at the shallowest spot. To obtain a channel 30 feet wide and 5 feet deep through both rapids, 669 cubic yards of rock would require to be removed at a cost of $3,500. The necessity of improving these rapids is problematical. At present, the Indian mission or school is making the most use of it, though the Mikado Gold Mine is being worked and will bring in their supplies via Ash Rapids. The traffic through the rapids is not large enough to warrant a lock and dam. When the water in the Lake of the Woods returns to its normal level, these rapids will be much improved.

Booms.

An examination was made on July 4 of the Rainy river, at a point 21 miles below Fort Frances where a boom had been placed across the river by the Minnesota and Ontario Power Company. The boom starts from the Canadian side at Lot No. 4 and extending downstream diagonally for a distance of 1,700 feet to the centre of the stream, then keeping the centre of the river for about 4,600 feet to a sorting gap, then along the American shore to Black river. Rainy river is the international boundary between Canada and the United States and the steamboat channel is very crooked, being first on one side of the river and then on the other. An opening of 80 feet was left in the boom for steamers to pass through, but in such shallow water that it was useless.

The boom had been constructed by the Minnesota and Ontario Company without permission being granted by the Governor in Council as provided for in the Navigable Waters Protection Act.

RICHARDS LANDING.

Richards Landing, District of Algoma, is a small village situated on the north shore of St. Josephs island in Georgian Bay, distant 9 miles by water from Desbarats, the nearest railway station. Population 350.

On June 29, authority was given to perform the work of making certain repairs to the decking of the Government wharf by day labour, and for which the sum of $60 was authorized.

The work was carried on from November 7 to 11, and consisted in the renewing of the decking where there were holes or defective planks.

Total expenditure for fiscal year, 1911-12, is $56.27.

RIVER ST. LAWRENCE (KINGSTON AND BROCKVILLE).

The work consists in the removal of rock below water in different parts of the river in order to obtain a channel 16 feet deep at low water.

The contract price being $3.95 per cubic yard, in place.

The contractors being the Montreal General Contracting Company.

The work was started in April, 1909, and has continued during each open season up to the present. It is confined to that part of the river known as Fiddlers Elbow, where the heaviest cutting is located.

The plant consists of a drill boat carrying four drills, the dipper dredge *Ottawa* with yard and three-quarters buckets, one 100-yard dump scow, 1 tug, shore camp, &c.

Excavation to date amounts to 16,813 cubic yards of which 7,475 has been removed during fiscal year 1911-12.

There are, approximately 1,270 yards drilled and blown but not excavated.

To complete the full contract will require the removal of 13,545 yards.

This work has progressed very slowly.

Pavilions.

Pavilions, nine in all, have been built by the Federal Government on certain islands in the St. Lawrence river for the convenience and use of the public for picnics, &c.

On September 14 last, authority was given to paint and clean five of these pavilions at a cost not to exceed $75 each.

The pavilions on which this work was done are located as follows:—

Nos. 3 & 4—On Deer island.
No. 5—On Grenadier island.
No. 6—At Mallorytown Landing.
No. 7—On Picnic island.

The work was performed by Mr. John Mallory and consisted in scrubbing pavilions and outhouses and giving pavilions one coat of paint.

Total expenditure for fiscal year 1911-12, is $400.

RIVER THAMES.

The River Thames flows through the city of Chatham and 18½ miles west from the latter place it empties into Lake St. Clair. At its mouth, a channel 8,100 feet in length has to be maintained, in order to reach deep water in the lake. Owing to the shifting character of the bottom of this channel, the material being sand, continual filling in occurs, and in consequence, the cleaning out of the channel has to be performed almost annually, in order to provide a minimum depth of 12 feet. A steady traffic prevails in and out of this river throughout the season, from the city of Chatham and the smaller points lying between the city and the mouth of the river. The Chatham Navigation Company operates a passenger and freight boat between the cities of Chatham, Windsor and Detroit, making three trips per week. The maximum draught as far as Chatham is now about 12 feet.

Dredging.

Authority was received on May 22, on June 19 and on August 1, 1911, permitting the removal of 99,000 cubic yards, place measurement, of material from the river and its entrance channel into Lake St. Clair; work to be performed under contract by W. E. Phin, Welland, Ontario, at a cost of 35 cents per cubic yard, place measurement.

Operations were commenced on May 31, and work was completed on December 1 last, and consisted of the dredging of a channel through bars at various points in the river, and deepening and widening that portion of the entrance channel where required, the excavating being carried to a depth of 14 feet below L.W.L.; 33,391 cubic yards of sand, clay and gravel were removed from the entrance channel, and 65,395 cubic yards of sand, silt and clay from different locations in the river. The completion of this work left a sufficiently wide channel available from the entrance to river from the city of Chatham.

Removal of Logs.

At the last two sessions of Parliament, a sum of $4,500 was voted for the removal of obstructions in this river between the city of Chatham and the mouth of the river. On July 26, 1911, authority was received to expend $1,800 on this work, which amount was supplemented by an additional $2,700 on December 21 last.

Work was commenced on August 4, and continued until December 22, 1911, when work closed down for the winter.

Suitable logging plants were used in the removal of some 1,561 pieces of logs, stumps, fallen trees and other débris, along a distance of 3¾ miles of the river, between Chatham and the mouth of the river. The work done has proved of great assistance to safe navigation of this river, over that portion from which obstructions were cleared, and it is the opinion of all vessel owners that no greater assistance can be rendered to boats utilizing this river than by keeping it clear of these sunken obstructions, which are a serious menace and so frequently cause considerable damage and heavy expense.

Owing to the late date at which the grant for this work was authorized, it was only possible to cover a comparatively short portion of the river which required attention, but it is the intention, during the coming season, to clear the entire river, between Chatham and its mouth, of all obstructions.

$78.99 was realized on the sale of logs lifted from the river, and with which amount the work was credited.

Total expenditure for the fiscal year 1911-12, was $37,308.47.

Lighthouse Wharf.

This wharf is located at the mouth of the River Thames, and was constructed for the purpose of serving the townships of Tilbury North, Tilbury West, Tilbury East and Rochester. A draught of 12 feet of water is available up to the dock.

On June 17, 1911, authority was received to expend the sum of $250 in making urgent repairs required to this dock.

Work was performed between July 4 and August 8 last, and consisted of the repairing of wall, damaged by ice, and the levelling up of a portion of filling in rear of dock.

In the performance of this work, some 788 feet B.M. of pine and hemlock timber, 13 brls. of cement and some 5 yards of gravel and filling material were used.

Total expenditure for the fiscal year 1911-12, was $249.91.

ROCKLAND.

The departmental dredge *Challenge* worked at Rockland (May 15-20), making four cuts, 248 feet, 175 feet, 99 feet and 101 feet, each 30 feet wide, to a grade depth of 6½ feet, to clean out bark, clay and deposit at W. C. Edwards Co.'s mill, at Rockland, making two cuts in front of W. C. Edward's dock, 325 and 75 feet long, each 30 feet wide.

4,598 yards (scow measure) stone, bricks, clay, bark and deposit was removed and spoiled in deep water ½ mile from dock.

RONDEAU.

Rondeau is an important harbour of refuge, and a port of entry, situated on Pointe aux Pins, about 19 miles south of the city of Chatham and 45 miles west of Port Stanley. It is a favourite summer resort, and the terminus of the Sarnia and Rondeau branch of the Père Marquette Railway. Population about 125, which is increased to about 600 in the summer months. The maximum draught of vessels entering this port is about 18 feet.

Breakwater.

At the last two sessions of Parliament, a sum of $105,000 was voted towards harbour improvements, and at the beginning of the fiscal year the construction of a breakwater extension 1,000 feet in length, to westerly pier, was in progress, the contract for which was awarded to William Bermingham, of Chatham, Ontario, on March 26, 1909, for the sum of $229,000.

The work was in progress at the beginning of the fiscal year and was completed on September 20 last. This structure consists of a substructure of close-faced crib-work, 35 feet wide at bottom and 30 feet wide at top, filled with stone ballast, and reaching to a depth of 26 feet 6 inches below L.W.L., with a superstructure of mass concrete.

A gap, 10 feet in length between inner end of new breakwater and outer end of existing pier, was filled with a structure of same design as main breakwater and with an approved expenditure of $2,300.

The whole of this work presents a very creditable appearance, and has already proved of great assistance to coal boats entering and leaving this harbour.

Repairs to Piers.

On July 31 last, authority was received to expend the sum of $100 for urgent repairs required to piers.

Work was performed between September 1 and 30, and consisted of the securing of the sheeting that protects the outer end of east pier, by use of iron straps; together with general repairs to decking of this pier. Between January 1 and 20 last, damage to west pier, caused by the Lake Erie Coal Company's boat, was repaired, and cost of same was paid by the owners of the boat.

Total expenditure during the fiscal year 1911-12, was $101,978.14.

ROSSEAU.

Rosseau, District of Muskoka, is a popular summer resort at the northerly end of Lake Rosseau. It is largely patronized by tourists.

On August 5, authority was given to make repairs to the structures by day labour, and work was carried on from October 2 to October 31.

The work consisted in the entire rebuilding of warehouse 'C' 24½ by 46½ feet; building an addition 16 feet in length to warehouse 'B,' also a second addition to this warehouse 16 by 18 feet, making the building in the form of an 'L.' The buildings have been painted.

Total expenditure for fiscal year, 1911-12, is $271.49.

ST. JOSEPH.

St. Joseph is a small village, situated on the easterly shore of Lake Huron, in the County of Huron, about 20 miles south of Goderich. Population about 50.

On March 15, 1911, authority was received to expend the sum of $500 in opening up a roadway to serve as an approach to the dock, this grant was increased by $250 on June 19 last.

The work was performed between May 11 and July 5, and consisted of the construction of a roadway 14 feet wide, for a distance of approximately 610 feet.

On August 3, 1911, authority was received to expend the sum of $25 in repairing the damage occasioned by a storm to the decking of pier and to the stone approach.

This work was performed August 10 and 11 inclusive.

Total expenditure for the fiscal year, 1911-12, was $775.37.

SALT POINT.

Salt Point is located about 2 miles southeast of the town of Brighton, at the easterly extremity of Presqu'Ile Point, near Presqu'Ile light in the Bay of Quinte, near the western entrance to the Murray canal.

On May 17, authority was given to perform certain dredging for which a contract was awarded to Messrs. R. Weddell Co., at 28 cents per cubic yard, place measurement.

Work was carried on from July 1 to 12, and consisted in the removal of a shoal, which in places projected above the water level. The area dredged over was, approxi-

mately, 1,300 feet long by 100 feet wide to a depth of 14 feet below zero of Harbour Commissioner's gauge at Toronto. The material removed was mud and gravel.

In doing the above work, the dredge removed some 11,880 cubic yards, in situ.

Total expenditure for fiscal year, 1911-12, $3,320.

SAUGEEN RIVER.

Saugeen river empties into Lake Huron, at a point about 32 miles from Walkerton, and about 43 miles from Sarnia. At the mouth of the river is situated the thriving town of Southampton; the harbour at the mouth of the river is utilized by a large number of deep-draught fishing tugs; it is also an important harbour of refuge; maximum draught of vessels about 10 feet. A large amount of fish is shipped annually from this point; value of catch last year amounted to approximately $32,000.

At the last two sessions of Parliament, the sum of $1,000 was voted for repairs to piers, and on August 5, 1911, authority was received to expend five-twelfths of the vote, expenditure of the remaining seven-twelfths being authorized on December 21, following.

Operations were commenced on September 9, and carried on until November 22, when work ceased, owing to grant becoming exhausted. Operations were again resumed on February 19 and continued until the end of the fiscal year.

The work performed consisted of the driving of 123 lineal feet of 4-inch sheet piling, 16 feet long, to afford protection to upper end of south dock, and the renewing of a few face timbers on the north dock, also repairs to decking.

Considerable work remains to be done to put these works in good condition, and for which a grant has already been provided.

Dredging.

The Dredging & Drainage Company, Limited, of Ontario, under authority received on September 12, 1911, commenced operations of dredging at Saugeen river on September 14, and ceased work on October 6, 1911, after having removed 8,434 cubic yards, scow measurement, of clay, sand and gravel.

The work done consisted of deepening and widening the channel, in harbour, at the mouth of the Saugeen river to a depth of 12 feet below L.W.L.

The total expenditure for the fiscal year, 1911-12, was $3,789.71.

SAULT STE. MARIE.

Sault Ste. Marie, District of Algoma, is situated at the head of St. Mary's river, which connects Lake Superior with Lake Huron. Population 15,000. It is on the main commercial route from the Great West to the seaboard. The tonnage passing through the canals at this place is enormous, being five times greater than that of the Suez canal, which is open to the commerce of the world.

On June 16, authority was given to expend the sum of $10,000 for the construction of an extension to the Government wharf, for which a contract was awarded to Mr. J. F. Boyd for the sum of $16,400 on July 18, 1910.

The work consisted in the construction and placing of a crib 100 by 50 feet on which was placed block and mass concrete superstructure.

On October 23, authority was given to construct five slips in the Government wharf; two in the new extension and three in the existing wharf at a cost of $300. This work was duly performed by the contractor.

On May 2, authority was given to expend the sum of $325 in repairs to the approach to the Government wharf by day labour. Work was carried on under the

supervision of the wharfinger, and has been completed. Some 14,000 feet B.M. hemlock plank were used for this purpose.

On May 30, instructions were given to prepare contract plans and specifications for the renewal of the old Plummer wharf, which forms the approach to the present Government wharf and for which the sum of $11,100 was appropriated.

Contract plans and specifications were duly prepared and forwarded to Ottawa and tenders were called, but up to date the work has not been awarded.

Total expenditure for fiscal year, 1911-12, is $13,361.17.

SILVER CENTRE.

Silver Centre, District of Nipissing, is on the west shore of Lake Timiskaming, 22 miles south of Haileybury.

Minor repairs were done on the Silver Centre dock, March 7 to 10, which consisted in replacing a series of broken sheeting and two upper walings, which were broken.

Expenditure to March 31, 1912, is $109.68.

SMYTH.

In 1909, a syndicate of public spirited citizens built a wharf at Elk Lake, on the Montreal river. This structure was later acquired by the Department and Parliament granted $500 towards the building of a pilework extension 144 feet long, 20 feet wide, and for repairing some ballast in the old wharf. The extension consists of a 20-foot span from the old wharf to the first pile bent, and 10 pile bents 12 feet apart, capped with 10-inch flatted timber; four continuous stringers of flatted 10-inch timber carrying the deck of 6-inch round poles, adzed off on top.

Expenditure to March 31, 1912, is $575.14.

SOUTHAMPTON.

Southampton is a prosperous town, situated at the mouth of the Saugeen river, in the County of Bruce, and on the easterly shore of Lake Huron, 32 miles from Walkerton, the county town. It is the terminus of the Grand Trunk Railway and a harbour of refuge. Population about 2,000. A large amount of lumber, ties, cedar posts and firewood is handled over the town dock, and on to which a line of the Grand Trunk Railway extends. Maximum draught about 12 feet.

At the last two sessions of Parliament, the sum of $3,000 was voted for harbour improvements, and on August 5, 1911, authority was received to expend five-twelfths of the vote, or $1,250. On December 21 following, further authority was received to expend the remainder of the vote, but the season was then too far advanced to take advantage of this authority.

Work was performed between August 14 and September 30 last, and consisted of the construction of a slip on the westerly breakwater, together with general repairs to the face timbers and decking of both breakwaters. The extent and aged condition of these breakwaters makes it necessary to expend a substantial grant every year on repairs.

In the performance of the above work, 30,116 feet B.M. of hemlock timber and 1,435 lbs. of iron were used.

Total expenditure for the fiscal year 1911-12, was $1,049.60.

SOUTH RIVER.

The departmental dredge *Mattawa* worked at the entrance of South river (August 4-September 30) making three cuts 1,627 feet, 1,865 feet and 829 feet long, each 33

feet wide, to a grade depth of 13 feet to improve the channel at the entrance of the river.

34,145 yards (scow measure) sand and deposit was removed and spoiled in deep water, half mile from the mouth of the river.

STURGEON FALLS.

Sturgeon Falls, a town of 1,400 population, is on the C.P.Ry. main line, 24 miles west of North Bay, and lies on the Sturgeon river, 5 miles from the mouth, where it enters Lake Nipissing.

At its last session, Parliament granted $750 towards repairs to the public wharf. Some broken planks were replaced July 17 and a new 3-inch covering was laid on top of the old one, August 24 and 25. The flooring of the wharf was raised two feet February 26 to March 16.

Expenditure to March 31, 1912, is $1,659.02, of which $952.48 was for dredging.

Dredging.

The departmental dredge *Mattawa* worked at the entrance of the Sturgeon river, to improve channel, which is always filling-in (October 7-November 11), making a cut 2,097 feet long, 33 feet wide, to a grade depth of 16 feet.

16,050 yards (scow measure) sand and clay was removed and spoiled in deep water, 1½ miles from the mouth of river.

SUMMERSTOWN.

Summerstown is a post village in Glengarry county, on Lake St. Francis, St. Lawrence river, 3 miles from Summerstown station on the Grand Trunk Railway, 8 miles east of Cornwall, and 6 miles west of Lancaster; in the vicinity are the summer resorts of Stanley and Hamilton's Islands, it has 2 stores, besides telegraph and telephone offices. Population 150.

The Summerstown public wharf, built in 1886-7, consists of:—

1. A close-faced crib headblock 120 by 20 feet, standing 15 feet high in 9 feet of water at low level.
2. A stone approach 90½ by 20½ feet connecting with headblock by a 22 feet span.
3. A shed 24 feet 4 inches by 30 feet along western side of stone approach.
4. A cattle yard near shed.

From February 24 to March 30, 1912, extensive repairs were made to wharf: 880 lineal feet of 12 by 12-inch timber around headblock, 132 lineal feet of 12 by 12-inch stringers, 520 lineal feet of longitudinals and cross-ties and 9,000 feet B.M. of 3-inch tamarac were all renewed. Some 16 cubic yards of stone were also placed on approach.

The work was done by day labour but was not quite completed.

The expenditure for the fiscal year, 1911-12, is $1,264.50.

THESSALON.

Thessalon, District of Algoma, is situated on the north shore of the north channel of Lake Huron. It is an important town containing several industries, and several saw mills. Large quantities of lumber are shipped from this place and it is a regular port of call for all regular lines. Population about 1,400.

On April 30, instructions were given to prepare contract plans and specifications for the construction of a breakwater, and on May 5, authority was given to expend the sum of $13,000 for the work.

Contract plans and specifications were duly prepared and forwarded to Ottawa and the work awarded to Mr. David Porter for the sum of $14,800.

Work was commenced January 17 last and is still in progress.

The work done to date consists in the construction of two sections of the breakwater, one being 375 feet long by 16 feet wide and the other being 310 feet long by 16 feet wide, composed of solid cribwork to a height of about one foot above water level.

Total expenditure for fiscal year, 1911-12, is $4,147,92.

THORNBURY.

Thornbury, Grey county, is an incorporated town of some 1,200 inhabitants, situated at the mouth of the Beaver river which empties into the Georgian Bay. It is on the Meaford branch of the Grand Trunk Railway, 8 miles from Meaford and 14 miles from Collingwood.

On May 30, instructions were given to prepare contract plans and specifications for certain harbour improvements for which the sum of $20,500 was appropriated.

Work was commenced November 20 last and is still in progress, and consists in building, sinking and filling with stone up to the required height the three cribs required, two of which are 100 by 16 feet and the third one is 100 by 24 feet. All have a depth of 20 feet 3 inches.

On August 5, authority was given to complete the crib-work constructoin by day labour and work was commenced April 1 and carried on till December 11, resumed on January 5 and completed March 30.

This work consisted in the completion of the construction of a crib-work wharf on the southeast side of the harbour, 100 by 20 feet, and the filling in and grading at the rear of the same.

In doing the above work, some 30,565 f. B.M. cedar, 900 f. B.M. elm, 2,528 lbs. iron, 1,360 cubic yards stone and 115 cubic yards gravel, were used.

Total expenditure for fiscal year, 1911-12, is $19,341.57.

TOBERMORY.

Tobermory, Bruce county, is situated at the northwest extremity of the Saugeen peninsula and is perfectly sheltered from all winds. It consists of the east and southwest arms, the latter extending from lighthouse point W. by S.½S. 900 yards with an average breadth of 100 yards. The low limestone shore sinks down almost perpendicularly to 7 or 8 fathoms, which depth, over soft mud, will be found all over this arm, excepting near the bottom where a muddy flat extends 120 yards to a depth of 18 feet. The harbour is too narrow to permit vessels to lie at single anchor and they are compelled to make fast to the shore, and to protect their sides from chafing against the rock, the Government has constructed glance booms for the vessels to lie alongside.

On April 22, authority was given to expend $30 in repairing the glance booms by day labour, and on August 21 this sum was augmented by $70.

Work was carried on from August 4 to August 8, and consisted in renewing a number of anchor chains of the glance booms also several eye-bolts where required.

Total expenditure for fiscal year, 1911-12, is $96.30.

TORONTO.

Toronto, York county, is a city of some 400,000 inhabitants, situated on the north shore of Lake Ontario. The harbour is formed of a circular basin, called Toronto bay, 1½ miles in diameter, which is separated from the lake by a large island, formerly a peninsula, about 6 miles long, making a safe well-sheltered harbour for a number of vessels. There are at present three entrances to this harbour, viz.: the eastern, the old western and the new western.

On June 6, authority was given to expend the sum of $155,000 in harbour improvements.

On May 15, 1908, a contract was awarded to the R. Weddell Company, for the construction of a new western channel to Toronto harbour, for the sum of $495,000.

Work was resumed this season April 3 and closed for the season December 13.

The work done this season consisted in dredging two cuts, each about 500 feet in length, also in doing a little scraping. This completes the dredging called for in the contract. Concrete blocks were moulded and placed on each side of the north pier for a distance of 1,550 feet, thus completing the block work. Two hundred feet of side walls and cross walls were built on the south pier, and 1,850 feet on the north pier. Each pier was decked with mass concrete for their total length, the south pier being 2,555 feet in length and the north pier 2,250 feet in length. Life chains have been placed along the entire face of each pier. 15,388 cubic yards of stone were put into the work this season. The work is practically completed.

On November 20, authority was given to have the contractors place a waling of British Columbia fir along the channel face of the piers of the new western channel at a cost of $4,230. This work has not yet been performed.

On July 8, 1909, authority was given to have the contractors construct two small cribs, 35 feet 8 inches by 20 feet in the channel piers of the new western channel, for ferry slips. These are located in the north pier between cribs 12 and 13, and in the south pier between cribs 11 and 12.

On September 21, 1910, authority was given to have the contractors provide a small boat landing on each pier of the new western channel. This work has been done.

On March 29, 1911, an agreement was entered into with Mr. J. E. Russell to perform certain dredging at the National Iron Works at the following prices per cubic yard: scow measurement, 20 cents; overcast, 14 cents.

Work was commenced March 31 and completed May 27. It consisted in excavating a cut 1,900 feet in length, with an average width of 45 feet and a depth of 16 feet, of which 833 feet was overcast and measured in situ, and the remainder was scow measurement.

In doing this work, some 14,647 cubic yards were overcast and 14,747 cubic yards were scow measure.

On May 18, authority was given to have certain dredging performed at Ashbridge's bay, for which an allotment of $6,800 was made. This amount, however, was, on July 17 last increased to $16,920. The work was awarded to the R. Weddell Company, at 12 cents per cubic yard.

This work commenced May 29 and was completed September 6, and consisted in dredging an area as an addition to the cut previously dredged having a length of 1,900 feet, a width of 200 feet and a depth of 16 feet.

In doing this work some 140,720 cubic yards, in situ, were removed.

On April 20, authority was given to perform certain dredging in the eastern channel and on May 2 last, an agreement was entered into with the R. Weddell Co. to perform the work at 16 cents per cubic yard, scow measurement.

Work was carried on from April 25 to May 13, and in doing this work, some 20,000 cubic yards were removed, and a cut was made through the bar off the eastern entrance to the channel piers, 200 feet wide on top, and about 500 feet in length, with a depth of 5 feet of excavation.

On April 5, authority was given to assemble the plant and have everything in readiness for the day labour work.

This work was commenced April 6 and carried on till March 30, and consisted in general repairs to the plant, assisting on surveys for all in situ dredging done, placing large stone around pier head of the east pier of the eastern channel at the south or lake end, and in the breakwater along the island shore where necessary for the protection

of the island and harbour, also repairing the structures on the Government reserve on the west side of the eastern channel.

Total expenditure for fiscal year, 1911-12, is $139,663.85, of which $25,925.18 was for dredging.

VICTORIA HARBOUR.

Victoria Harbour, Simcoe county, is situated on an inlet of the Georgian bay, at the easterly end thereof, and is a well-sheltered harbour, easily approached from the open lake. Population 1,500. There are extensive saw-mills, and it is the principal terminal of the Canadian Pacific railway, on the Georgian bay, and they have constructed a two million bushel grain elevator and are constructing large concrete wharfs.

On April 26, authority was given to have the Canadian Dredge and Construction Co. resume dredging and on June 12, the amount authorized for the work was $62,500. but on August 9 last, this amount was increased to the full amount of the appropriation, viz.: $150,000.

Work was resumed on May 8 and carried on till June 24, when the amount authorized was expended, then it was started again August 1 and closed for the season December 20.

The work done this season, consisted in dredging crib seats for the continuation of crib-work and concrete wharf in front of freight-sheds for a distance northeasterly of 1,033 feet 6 inches, and for a distance southwesterly of 338 feet, also crib seats for the continuation of the wharf in front of the elevator northeasterly and in line with same for a distance of 538 feet and for the continuation of said elevator wharf and in line therewith, southwesterly, a distance of 1,502 feet; also dredging a channel, as nearly to grade as possible, viz.: 25 feet deep in approaches to and in front of freight-sheds, also widening channel in approaches to elevator and dredging in slips between freight-sheds and elevator.

During the season, some 595,178 cubic yards other materials, and 46,716 cubic yards rock were removed.

Total expenditure for fiscal year, 1911-12, is $149,983.76.

WAUBAUSHENE, FESSERTON AND COLDWATER.

Waubaushene, Fesserton and Coldwater, Simcoe county, having a population of 1,500, 1,000 and 1,500, respectively, are all situated on Matchedash bay, an arm of the Georgian bay at the south end. A large lumber mill is located at Waubaushene.

On April 25, authority was given to remove 2,257 cubic yards of rock at Waubaushene, the work to be performed by the Penetanguishene Dredging Co., at $3 per yard, scow measurement.

Work was carried on from May 6 to July 22, and consisted in the removal of part of the shoal lying opposite the wharf of the Georgian Bay Lumber Co., making the channel at this point 90 feet wide and 14 feet deep. Some rock and other material were removed from the channel between this point and the loading stage of the company to the east, making the channel about 60 feet wide.

In doing this work, some 1,790 cubic yards of rock and 1,640 cubic yards of other materials were removed.

On April 15, authority was given to have the Penetanguishene Dredging Co. continue the dredging between Fesserton and Coldwater at the following prices per cubic yard: overcast 14 cents, scow measure 15 cents, the channel to be not over 50 feet wide and 8 feet deep. However, on May 10, instructions were received to make the channel 10 feet deep and 30 feet wide.

This channel is now practically completed with the exception of dredging a cut 30 feet wide and 10 feet deep and about 350 feet long through the bar at the junction of the North and Coldwater rivers, over which, at present, there is an average depth of 7 feet.

The channel dredged this season has a total length of 7,010 feet.

The quantity of material dredged at Waubaushene amounted to 1,790 cubic yards of rock and 1,640 cubic yards of other materials, while at Fesserton to Coldwater the quantity removed amounted to 67,736 cubic yards overcast and 3,195 cubic yards, scow measure.

Total expenditure for fiscal year, 1911-12, is $20,636.52.

WELLAND RIVER.

Welland river runs through Welland county, emptying into the Niagara river about 3 miles above Niagara Falls.

On May 10, authority was given to have the wreck of the vessel *Eric Bell* removed from this river, and an agreement was entered into with Mr. J. E. Russell to do the work for the sum of $1,800.

The work was duly performed in April last.

WENDOVER.

Wendover is a post settlement in Prescott county, on the south shore of the Ottawa river, 31½ miles below Ottawa, and is also a station on the C.N.Ry, 24 miles from Hawkesbury.

The wharf required minor repairs which were made June 15 to 24. Repairs consisted in painting sheds; removing planking on high level landing; repairing railing; replacing 30 lineal feet of capping; repairing sheeting and replacing one fender.

The wharf requires protection from ice pressure nearly every spring. This year, the work was slightly more tedious than usual and consisted in making a saw cut in front of wharf so as to make a ready channel to prevent jamming of ice. Work was done April 15 to 17 at a cost of $13.50.

WHEATLEY.

Wheatley is a village, situated on the north shore of Lake Erie, and on the line of the Père Marquette Railway, about 30 miles south-west of Chatham, and 44 miles by rail from Windsor. Population about 1,000.

At the last two sessions of Parliament, the sum of $10,000 was voted towards the construction of a landing dock, and on the 29th September, 1911, a contract was awarded to Mr. William Bermingham, of Chatham, Ontario, for the sum of $36,000.

In September last, instructions were received not to proceed with this work, and the contractor was notified accordingly.

On the 22nd April, instructions were given to proceed with this work, and since that date the contract has been signed, and it is understood that the contractor is now making arrangements to begin operations.

WHITBY.

Whitby, Ontario county, is situated on the north shore of Lake Ontario 30 miles east of Toronto, population 2,300.

There has been no work done at this place during this season. The harbour has been purchased from the Port Whitby Harbour Co., by the Department.

WIARTON.

Wiarton, Bruce county, is a prosperous town at the head of Colpoy's Bay, about 32 miles west of Owen Sound. It is the terminus of the Georgian Bay and Lake Erie branch of the G.T.Ry.

On the 16th June, authority was given to complete the construction of an extension to the breakwater, for which a contract had been awarded to Messrs. Kastner and Porter on the 3rd November, 1910, for the sum of $13,990.

Work was resumed 1st April and completed 6th September, and consisted in the construction of an extension 160 by 25 feet with cribwork substructure and concrete superstructure.

On the 16th May, authority was given to have certain dredging performed for which a contract had been awarded to the C. S. Boone Co., at 26 cents per cubic yard, place measurement.

Work was commenced 21st June and completed 20th July, and consisted in excavating a channel having a mean width of 350 feet to and alongside the wharfs of the Crown Portland Cement Co., all to a depth of 16 feet below ordinary water level.

In doing this work some 16,840 cubic yards, in situ, were removed.

On the 21st July, authority was given to have the C. S. Boone Co. perform certain other dredging at the same rate.

The work was carried on from 25th July to 10th August, and consisted in excavating a channel between the town wharf and the Government breakwater 100 feet in width with a minimum length on the north-west side of 580 feet and on the south-east side of 1,100 feet all to a depth of 16 feet below bench mark.

In doing the above work, some 11,458 cubic yards, in situ, were removed.

Total expenditure for fiscal years 1911-12 is $18,633.73, of which $7,607.48 was for dredging.

WINDSOR.

The city of Windsor is situated on the Detroit river, in the County of Essex, and is the terminus in Canada, of the Grand Trunk Railway, the Canadian Pacific Railway, the Michigan Central Railway and the Père Marquette Railway. It is a thriving and prosperous city with a population of about 19,000. It is a very important port of entry, the customs duties collected in the city, together with the adjoining town of Walkerville, amounting to approximately $1,500,000.

At the last two session of Parliament, the sum of $30,000 was voted towards the construction of a landing dock. Plans and specifications were made and tenders called for. Only one bid, however, was submitted, and it was considered too high for acceptance. Since that date, a slight change of location of this dock has been approved, and new plans and specifications have just been drawn and submitted for approval, so that it is anticipated that, before long, tenders will be called and the work proceeded with.

WINNIPEG RIVER—(MILLERS RAPIDS).

An examination and survey of the Millers rapids, Winnipeg river, Ontario, was made February 8, for the purpose of finding out the actual condition of the water at that place. It was claimed that when the Kenora Municipal power plant, which is located a short distance above Millers rapids, is practically shut down on Sunday, the flow of water is materially reduced, and on the starting of the plant on Monday morning, the water would rise. This proved to be the case. To overcome this rise and fall, it would be necessary to blast a channel. To do this, 600 cubic yards of solid rock would have to be removed at a cost of $5,500, which would include the fitting up of a drill scow.

PROVINCE OF MANITOBA.

BROKENHEAD RIVER.

During the summer of 1909, a channel was made through the bar at the mouth of the Brokenhead river and as a result a considerable trade developed.

It was, however, found that the current from the river would not maintain the channel and the types of boats engaged in the trade were not adapted for crossing the lake. Therefore it was decided to open up an inside route from the Red river.

The proposed route leaves the Red river *via* the Maria creek, a short distance north of the forks of the Red river; thence through Maria, Straight and Swede creeks, a distance of 4.30 miles, the water is deep and the creeks suitable for navigation, excepting three points on Swede, which will need to be cut off.

Dredge *Crane* began work at the head of Swede creek on July 21st. The first work was to cut through the river bank into a slough; thence across the slough and into a creek tributary to Anderson's creek. The dredge then moved about half a mile down Anderson's creek and started a cut across a slough to Crooked creek. A distance of 800 feet was finished by October 19, at which time the dredge pulled out to escape being frozen in the ice. The head of the cut is within a few hundred feet of Crooked creek, which has very good water for over three miles. The total quantity removed during the season was 38,254 cubic yards. This work cost $2,973.67, equal to 7.7 cents per cubic yard to which add 0.07 cents for dredge vessel repairs. The cut made was 40 feet wide and the bottom two feet below zero of water gauge. In crossing the sloughs, the dipper would cut deeper than the required grade line and it was found necessary to move some of the material twice to prevent it sliding into the cut.

From the Red river to the Brokenhead, the following shows the mileage of the creeks, sloughs, &c., utilized in forming the proposed route:

Creeks	9·85
Sloughs	2·68
Cuts through banks of creeks	0·36
Total	12·89

DELTA.

With a view to protecting the mouth of a channel, dredged by the Department in 1904-5 from erosion at Delta, on the southern end of Lake Manitoba, an examination was made on February 1st., and it was determined that a section of the shore line, probably 200 feet long, had been worked away on the west side, where the land is four feet above the present water level. It would require about 1,200 feet of pile protection work along the lake shore to protect the banks from further action of the waves and currents. The proposed protection work would cost $4,700.

GIMLI.

The wharf at Gimli, Selkirk county, is exposed to heavy lake seas and as the protection and dockage facilities are found insufficient, it was decided to add an extension of 150 feet in direct alignment with the outer end of the present wharf.

Plans and specifications were prepared, tenders called, and the contract awarded to Messrs. Buchanan and Fraser of Winnipeg; contract price $9,910.

The wharf will consist of four pile bents, 5 feet 3 inches centre covered on the outside and end with closely driven tamarac piles. The stringers, braces and decking are to be British Columbia fir. The whole pier will be filled with stone ballast.

The value of the work done and materials supplied amounts to $6,746.54, being a little more than two-thirds of the whole contract.

The contractors are doing good work and making satisfactory progress.

Dredging.

During 1907, an orange peel dredge worked at Gimli, dredging a berth on the south side of the wharf.

As the Department had no scows the material was dumped to the south of the cut.

It was not until 1911 that the department had a dredging plant suitable to remove the dump. On September 19, dredge *Red River* was towed to Gimli. The work was finished October 5, at which date 2,950 cubic yards had been removed. This was scowed and dumped into deep water in the lake. The cost was $528.45 being 19.3 cents per cubic yard, to which add 2 cents for dredge vessel repairs. Depth of water provided 7½ feet below zero gauge.

MOSSY RIVER.

The work of fitting up dredge *Dauphin,* for the season, began April 27, and the first dredging was done May 1. Work started at station 279, that being the place where the dredging stopped the previous fall.

The portion of the river passed over this year was very much better than formerly. Long reaches of good digging between the rapids enabled the dredge to move forward rapidly. The most difficult part was at Bells rapids, which required ten weeks time and the quantity dredged amounted to 11,596 cubic yards. Dredging was done at twelve other points and a total of 24,599 cubic yards clay, sand and gravel and boulders were removed. The cut made was 40 feet wide. A distance of 24,900 feet, between the rapids, was swept for a width of 40 feet and all rocks found were removed. Work stopped at station 848+70, near the head of School Section rapids, south of Seifferts farm. The distance covered was 11½ miles.

The expenditure amounted to $2,920.57, being 11·8 cents per cubic yard, to which there should be added two-tenths of one cent for dredge vessel repairs.

Much difficulty was experienced in handling the dredge in Bells rapids and the School Section rapids.

It was necessary to remove pile bents from Fork river and Bailey's bridge to allow the dredge to pass. These were afterwards replaced and the bridge made good in every respect.

After dredging was finished, the dredge was hauled up the channel dredged in the School Section rapids and laid up for the winter in the most suitable place to be found near the head of the rapids.

NINETTE.

An examination was made on May 6 of the site of the wharf asked for at Ninette sanatorium, on Pelican lake, Souris county. Since 1907, there has been no commercial development on the lake, but there has been some development as a summer resort and the sanatorium has been built. Several large gasoline boats are in commission, one said to be capable of carrying two hundred people. It is urged by the medical superintendent of the sanatorium that the wharf be built in the interest of the patients and visitors. The proposed pier will cost about $3,500.

RED RIVER.

The principal dredging on Lake Winnipeg always occurs at the mouth of the Red river. The old or east channel is the one used by steamers and carries all the traffic

between Winnipeg, Selkirk and all points on Lake Winnipeg. The channel extends 2¼ miles to deep water in the lake. Generally, the inner portion maintains a wide and deep channel. The outer end, for a distance of about ¾ of a mile, is subject to lake storms and requires dredging nearly every year. This year, the silting in was more than usual and it was deemed advisable to utilize two dredges for the first part of the season, to get a cut through the shoal spots. The dredge *Assiniboine* with pile driver and pontoons left Selkirk on April 25 and proceeded to the mouth of the river, but owing to heavy winds and ice and the salving of the steamer *Majestic* which had gone ashore the previous season, no dredging was done until May 15. The dredge *Winnipeg* and scows were towed by tug *Sir Hector* to mouth of river May 5, and started dredging May 9 on the shore end of the channel near the elbow, and worked there until June 27, dredging 13,450 cubic yards of sand and clay at a cost of $2,618.84 or 19½ cents per cubic yard, to which 2·3 cents must be added for dredge vessel repairs. The *Assiniboine* dredged a channel for a distance of 3,300 feet to a depth of 7 feet below zero of gauge, north of the elbow to deep water and removed 32,110 cubic yards of sand and clay at a cost of $7,640.03 or 23·8 cents per cubic yard, 4·6 cents per cubic yard must be added for dredge vessel repairs. The cost of dredging was high owing to the high winds that prevailed.

Amount of material dredged by *Assiniboine*..	32,110	cubic yards.
" " " *Winnipeg*...	13,450	"
Total..	45,560	"

During the month of February, a survey was made of the east channel and soundings taken which were plotted on a plan, showing a comparison with dredging of the previous year.

Entrance Channel.

A channel was cut through the bar at the mouth of the centre or new channel several years ago, and being only ¾ of a mile long it was thought it would maintain itself, but considerable filling-in has taken place. It was for the purpose of stopping this filling-in and at the same time confining the water to the channel that protection work was proposed. During March, 1911, two sections, each 500 feet long, were driven 1,300 feet from the shore, but the storms in the early spring broke the sheet piling. The piles, however, were not disturbed. It was considered advisable to adopt a stronger form of work, where the water was 3 and 4 feet deep and was exposed to the winds and ice. From the shore northward on the east side for a distance of 620 feet and on the west side 584 feet, where the water was shallow and the ice from the lake could not reach it, a lighter form of construction was used, consisting of a single row of piles driven 4 feet centres, leaving 3 feet above the level of the water. On these, wales, acting as guides for sheet-piles, were bolted, and piles from 12 to 18 feet long were driven, and on the outside of the sheet-piles another wale was placed and firmly bolted through the sheet-pile, inside wale and pile. From the end of the single row on the east side, where the water deepened, two rows of piles were driven 4 feet centres, parallel to the centre of the channel and 8 feet apart. On these piles on the outside, wales 10 by 10 and 10 by 12 were bolted and acted as guides to the 6-inch sheet-piling 24 feet long, which were driven to solid bottom. Round timber braces connected the front and rear row of piles and longitudinal timber extended the whole length of the work on the back row. Cross braces were put in on the top, to help resist the ice pressure. On the west side, piles 4 feet centre were driven from the end of the completed work to connect with the part driven last winter, but owing to the breaking up of the ice it could not be completed. It is intended to place the dredged material on the outside of the work so as to form a future protection.

The cost of doing the sheet-piling was high, as the frost went into the ground very deep under the ice, there being little or no snow and the ground had to be picked to permit driving.

During the month of February, a survey was made of the mouth of the east channel, new entrance, soundings taken and plotted on plan so that result of the protection work cam be studied.

The total expenditure was $22,573.62 for dredging.

LISTERS RAPIDS.

The work is required to give a channel 200 feet wide and 9 feet deep with water at elevation 703+Public Works datum. The dredging is largely surface work, removing boulders, but in stretches, solid rock has had to be moved. The depth varies from 7·6 to 9 feet. The dredge *Red River,* with scows and tug *Lisgar,* towed to Listers on May 12; after sweeping the channel to locate the large boulders, dredging was started May 22, and worked until June 2, when dredge was towed to Lockport, returning June 9, and working until the 22nd, a total period of 23·7 days, dredging 3,081 cubic yards of gravel, hardpan and rock at a cost of 48.1 cents per cubic yard, to which must be added 2 cents for dredge vessel repairs. The dredge *Red River* was then sent to Winnipeg Beach and the dredge *Winnipeg* replaced her June 27 with tug *Lisgar* and scows and worked until the laying up of the dredge November 3, with the exception of the following periods, when dredging was being done at St. Andrews locks, and from July 18 to 21; September 6 to 12; and October 21 to 31.

During the time dredging was carried on at Listers, 10,075 cubic yards of gravel, hardpan and rock were removed at a cost of $4,925.76 or 48·9 cents per cubic yard. To this must be added 3·8 cents for dredge vessel repairs.

Total cubic yards removed by dredge *Winnipeg*.	10,075
Total cubic yards removed by dredge *Red River*.	3,081
Total.	13,156

ST. ANDREWS RAPIDS.

The principal improvements at St. Andrews rapids, consisted in blowing a channel through a reef extending across the river, 100 feet wide and 1,000 feet long to give a depth of 10 feet at average low water or one foot below the mitre sill of the lower entrance of St. Andrews lock. Blasting was commenced in May, but owing to delays and accidents from collisions by passing steamers, only 3,027 cubic yards, scow measurement, were removed up to the closing of navigation. As soon as the ice was strong enough, a large force of men and eleven steam drills were set to work, working all winter, and the area required for the channel was thoroughly blasted, but the removal of the rock cannot be begun until navigation opens and the dredges get to work.

There were several slides along the banks of the canal carrying rip-rap with them; these had to be removed, and new rip-rap put in place. There was also a settlement back of the lock walls and it was necessary to fill it up with gravel. The cost of the above, including painting the frames was $1,770.35. Advantage was taken of the extension of power lines of the Winnipeg, Selkirk and Lake Winnipeg Railway to enter into an agreement with them to supply power to operate the crane on the St. Andrews dam, furnish light and power when required for the operation of the bascule lift span, when built, at the rate of 3 cents per K. W. Work was accordingly started to put up poles for lights and lay the necessary cable across the dam. It was found necessary to enlarge the present lock-house to permit of the installing of the motor generator that was in the power-house on the east side.

This was necessary as the current furnished by the company is alternating and to utilize our own power in case of an emergency it has to be transformed to direct current. It was not advisable to take the high tension line with the direct current line through the single conduit that is placed under the lock.

The dredge *Red River* with tug *Sir Hector* and scows worked from the 3rd of June to the 8th and from the 23rd to 25th and removed 927 cubic yards of blasted rock at a cost of $357.34 or nearly 37½ cents per cubic yard. To this must be added 2 cents for dredge vessel repairs.

The dredge *Winnipeg,* a more powerful dredge, with scows, and tug *Friday,* dredged at intervals from July 18 to October 31, a total period of 21 days, removing 2,100 cubic yards of rock at a cost of $910.54, or 43⅓ cents per cubic yard. To this 5 cents must be added for dredge vessel repairs.

SASKATCHEWAN RIVER (GRAND RAPIDS).

A report was made on February 7 on an application for a dam at the Grand Rapids of the Saskatchewan river, for the purpose of furnishing power to operate a pulp mill. The Grand Rapids are not navigable, in fact only one steamer is known to have gone through them. There is a fall of 69 feet distributed over a distance of 5 miles. A dam could be built about a mile below the head of the rapids, capable of developing 80,000 horse-power, this dam to be utilized later on by the Department, if necessary in the interests of navigation, and the rights to construct a canal and locks to be reserved.

SELKIRK.

Repairs were made to Selkirk wharf, Selkirk county, consisting of new stringers, planking, and guard-rail at the following cost:—

Labour	$ 337 60
Material	1,518 99
Total	$1,856 59

Dry Dock.

An examination was made December 26, 1911, at Selkirk, on the Red river, for the building at that place of a dry dock, capable of accommodating the largest steamer or barge than can enter the St. Andrews lock. At the present time, a small marine railway is the only means of taking steamers out of the water for repairs. The number of vessels registered at Winnipeg is 37, with a total tonnage of 5,069 tons. To build a dry dock 210 feet long and 56 feet wide would cost $196,882.

Marine Railway.

A report on the feasibility and cost of a marine railway on the Red river at Selkirk was submitted February 17.

At the present time, a small marine railway owned by the Dominion Fish Company at Selkirk, situated at the north end of the town, furnishes the means of taking vessels out of the water. The number of vessels registered in Winnipeg is 37, with a total tonnage of 5,069 tons. To build a marine railway capable of handling the largest vessels that can pass through the St. Andrews locks would require approximately $61,000. The foundation would have to be of pile as the extreme weight handled would be in the vicinity of 1,000 tons. The value of the land is not taken into consideration in this estimate.

Selkirk Slough.

A small amount of dredging was done at the slough which is the winter harbour of the dredging fleet as well as the steamers owned at Selkirk. The heavy spring rains washed a large amount of earth and clay into the slough, practically blocking the channel. The dredge *Winnipeg* removed 3,240 cubic yards at a cost of $563.61, or nearly 17·4 cents per cubic yard, to which must be added 3·8 cents for dredge vessel repairs. The dredge *Red River* dredged 2,220 cubic yards, costing $651.58, or 29·3 cents per cubic yard, adding 2 cents for dredge vessel repairs. The dredge *Crane,* before towing to her destination in the Brokenhead channel, removed 1,500 cubic yards, costing 44 cents per cubic yard, to which ¾ per cent must be added for dredge vessel repairs. The high price is explained by the *Crane* just being put into commission and was tried out before leaving the slough.

Summary of dredging at slough:—

	Cubic yards.
Dredge *Winnipeg* dredged	3,240
Dredge *Red River* dredged	222
Dredge *Crane* dredged	1,500
Total	4,962

Survey.

An examination of the slough and City park was made September 22 for the purpose of ascertaining if it was necessary to dredge a channel into the park for furnishing shelter and better facilities for laying up steamers in the winter. This would require a channel approximately 1,200 feet long, 60 feet wide and possibly 9 feet deep. It would require the removal of 24,000 cubic yards of material and cost $5,000. There did not appear to be sufficient demands for the channel, but it was recommended that the slough be widened at the Government shipyard.

VICTORIA BEACH.

It having been decided that a breakwater and wharf was necessary at Victoria Beach, Selkirk county, on the east side of Lake Winnipeg, for the purpose of making a harbour of refuge; tenders were called for a breakwater 342·2 feet long and 15 feet wide, to be of pile construction filled with ballast. The contract was given to the Fort Garry Lumber Company for $14,500, to be completed in six months from the date of the notification of the acceptance of the tender.

The contractors have the piles ready for delivery as soon as navigation opens, and a quantity of stone has been delivered at the site. No construction work has been done, and no payments made to the contractors.

WINNIPEG BEACH.

A contract for the construction of this pier was let to John Gunn and Sons of Winnipeg, Manitoba, for $19,192, to be completed by the 1st of July, 1911. They carried out their contract and finished in the time specified. The extra work amounted to $25.60. The contractors did good work and built a very substantial wharf.

The total expenditure for the fiscal year 1911-12, is $10,415.80.

Dredging.

The dredging at this place was required to give an approach from Lake Winnipeg to the pier, as well as to provide deep water inside the pier. The dredge *Red River* and scows with tugs *Victoria* and *Lisgar,* were sent on the 27th of June from Lock-

port to Winnipeg Beach, and started dredging on June 28. The dredge remained at work the balance of the season, going into winter quarters October 31, at Selkirk. During this time, 32,033 cubic yards of clay and sand were dredged at a cost of $3,766.55, a rate of 11¾ cents per cubic yard, to which must be added for dredge vessel repairs, 2 cents per cubic yard.

WINNIPEG (DOTY WHARF).

The Doty Engine Works Company, having made an application for permission to construct a wharf on the Red river in the City of Winnipeg, an examination was made during the month of March. The proposed wharf is to be 54 feet wide and is located on the south side of a prolongation of Notre Dame street. The application was approved.

ALBERTA AND SASKATCHEWAN.

ATHABASKA RIVER.

The Athabaska river, rising in the Rocky Mountains, flows in a north-easterly direction across Northern Alberta. East of Athabaska Landing, it serves as the only method of transportng supplies to the district of Fort McMurray, Athabaska lake, Great Slave lake and the MacKenzie river. About 175 miles east of Athabasca Landing is a series of rapids, the largest of which is Grand Rapids, having a drop of 40 feet in less than a mile. These rapids are made most dangerous to the scows transporting supplies by being choked with numerous boulders. At Grand Rapids especially, it has always been necessary to unload the scows and let them down the rapids empty, portaging the supplies overland.

It was considered possible, by removing the boulders from the channel used by the scows, to so improve it that the loaded scows might go down in safety. Work was started at Grand Rapids during the fiscal year 1910-11, and great improvement was made. During the following summer, scows carried a considerable portion of their loads down the rapids.

During the fiscal year 1911-12, the work of removing the boulders was continued. Some 261 boulders, containing 596 cubic yards of rock, were removed from Grand Rapids and Boiler Rapids. The channel at Grand Rapids is nearly completed, while it is claimed that the work done at Boiler Rapids has removed all danger to loaded scows at that point.

Work was started September 18, 1911, and the party was dismissed on February 29, 1912. More than three weeks of this time was spent in travelling to and from the work.

Expenditure for 1911-12, is $6,272.44.

BUFFALO RIVER (GROUARD.)

Buffalo river is a channel, about four miles long, connecting Buffalo bay with the western extremity of Lesser Slave lake, being about 300 miles from Edmonton, the nearest railway point.

The town of Grouard, population 500, is situated at the head of this channel, or the outlet of Buffalo bay. Owing to the fact that this channel is very shallow, the steamers are unable to reach Grouard except during high water season, landing at Shaw's Point, 7 miles from the town. The freight, amounting to about 1,000 tons for the season, and the passengers, are transported to Grouard by teams over roads almost impassable.

To provide a channel 50 feet wide and 4½ feet deep at low water, so as to connect the deep water of the lake with Grouard, and the formation of a basin, 125 feet square, for turning, will require the removal of about 90,000 cubic yards, in place. A channel 30 feet wide with a depth of 3½ feet, which would be sufficient for the greater part of the season, to a landing only two miles from Grouard, would only entail the removal of 22,300 cubic yards of material.

During the past fiscal year, the dredge *Athabasca* was placed on this work on September 27, 1911, and worked until October 19, when work was suspended. Actual dredging was carried on for 17 days only, 1,442 cubic yards, in place, being removed.

This dredging was done towards the completion of the smaller channel, but a depth of 4½ feet has been reached, in order to have the portion covered to the full depth required.

LESSER SLAVE RIVER.

The Lesser Slave river drains Lesser Slave lake, flowing into the Athabaska river 90 miles north-west of Athabaska Landing. At present this is the line of travel most used for entrance to the Peace River valley. About 1,000 tons of freight, beside passengers, was carried over this route last season.

The river has a long series of shallow rapids extending for about 20 miles above the mouth, with a total drop of 80 feet. Considerable work has been done, during the years 1908-9-10, in the construction of wing dams and dredging to improve the navigation of these rapids. A small steamer carrying from 8 to 10 tons of freight has made a number of trips through the rapids, during 1911, but the larger steamers of the Northern Transportation Company plying on the Athabaska river and Lesser Slave lake are unable to pass the rapids and the freight is transferred by teams.

During the fiscal year 1911-12, the work done on Lesser Slave river consisted in dredging out a number of narrow shoals between the head of the rapids and Lesser Slave lake; in building one wing dam and repairing two others; in removing some boulders, and buoying a portion of the channel. Some 2,570 cubic yards of material were removed by the dredge. While the party left Athabaska Landing for the work in April, actual improvements to the river were not under way until May 22, the time being spent in repairing the dredge and roping it up the river some 14 miles. The work was completed August 3. The expenditure was $2,897.81.

The dredge was removed to Grouard, at the head of Lesser Slave lake, in September, where dredging operations were carried on until October 21, some 1,442 cubic yards of material being removed.

PRINCE ALBERT.

This work is situated in the constituency of Prince Albert.

The work to be done consisted of the construction of a wooden pile wharf, 225 feet long and 20 feet wide, this length does not include that contained in the angles of the wharf, which run into the bank of the river. The wharf was built in three levels, each having a difference in elevation of two feet, the object of this being to accommodate boats so far as possible at varying stages of water prevailing during the navigable period of the year. The middle deck was made the longest of the three, as it would be most used.

As to the protection work, the plan as approved called for the erection of pilework protection on the south side of the river, between the west end of the wharf and the Canadian Northern Railway bridge, a distance of 2,300 feet. As the wharf was most urgently required, the work done in the past fiscal year was practically confined to its construction.

The conditions to be encountered and provided against on the North Saskatchewan river consist of ice flows in the spring which exert great pressure on work of this kind when the ice is moving, and the water at this time is usually very high. They are also liable here to high floods in midsummer, when the hot sun causes the snow to melt in great quantities in the Rocky Mountains, where this stream has its origin. For this reason, considerable expense and great precautions were taken to have the wharf properly ballasted at the points where pressure of this kind would be most felt, and in addition to this, both ends of the wharf protection, consisting of acute angles extending from the wharf proper into the bank, in the form of round and sheet piling construction.

Construction started July 20, work stopped for lack of funds October 14, work resumed again December 19; work suspended for fiscal year 1911-12 on March 30, 1912.

Work was continued during the winter, as indicated previously, as labour was more plentiful and cheaper at that time, and rock was obtained from the river bed and placed on the wharf, which would have been impossible to get during the summer. The wharf being practically completed at this time enables it to be used for traffic at the opening of navigation this summer. Operations during the coming season can now be confined almost exclusively to the construction of the protection work along the river bank as indicated in this report. The round piling and wales for 120 feet of protection work extending west from the wharf were placed in position during the fiscal year just closed.

The amount of work remaining to be done in connection with the wharf proper consists of a small amount of filling at the back of same, and placing in position of paving stones. Four-inches sheet protection is also to be driven along the back of the low level section of the wharf and into the bank, covering a distance approximately of 100 feet to act as a retaining wall for the filling between the wharf and the bank. The wheel-guard, for which we have material on hand, is also to be placed along the outside edge of the wharf this year.

The expenditure for the fiscal year 1911-12, is $11,380.68.

Removal of boulders.

This work consisted of the removal of large boulders in the vicinity of Prince Albert, on the North Saskatchewan river, blasting being resorted to where necessary to reduce the size of same, the rock being taken out of the channel used by river craft and placed on the shores adjoining.

For use in connection with the work, the Department had two scows; one, called the *Hawk*, dimensions 45 by 16 by 2 feet 8 inches, was used for towing material. The only facilities for towing were those provided by passing river steamers, which gave their services gratis, as the work was of considerable benefit to them. These scows were only capable of handling boulders of a limited size and the capacity of the apparatus was small on account of the hand-hoisting gear. In the course of their operations, the scows had to move about a good deal from place to place, and as they could not go under their own power when moving, the outfit was a slow, and, considering the size of the plant, an expensive operation. However, it could not be avoided under the circumstances. The channel was only cleared at those points which were in most need in this respect, and it was felt that the plant should endeavour to keep the channel clear of boulders such as it could handle, rather than attempt any heavy work in any one locality which would be beyond the power of the outfit.

Work was started at repairs to plant, May 19; at removal of boulders, June 1; stopped on account of high water, July 3; resumed again, July 24; again stopped on account of high water, July 31, and resumed again, September 18.

Weight of boulders removed to October 31, 1911, 313·5 tons.

There was a period, in the last season, of almost two months during which the plant did not operate, owing to the abnormally high water. It was not considered advisable to try to work at this time, as the water was so high it would have been very expensive and dangerous work to continue.

SASKATCHEWAN.

LAST MOUNTAIN LAKE.

This work consisted of dredging a channel and harbour, or turning basin, at the south end of the lake. Last year, a channel was dredged from the harbour, as laid out, to deep water in the lake, a distance of 4,700 feet. This channel was, however, only 40 feet wide and the material was simply side-cast from the dredge. This year, the work consisted largely in widening the channel to 60 feet at the water line, the material being towed out into deep water in the lake and dumped. The average depth of water in the channel is 6½ feet. There was also a small amount of excavating within the harbour.

The plant consists of one bottom-dump dipper dredge, with a capacity of one cubic yard; dimensions: 60 by 22 by 4½ feet, two side-dump scows, each having a capacity of 32 cubic yards; dimensions over all: 54 by 13 by 5 feet, together with a small tug for towing.

Size of harbour as staked, 900 by 125 feet.
Work started at widening channel, May 24, 1911.
Channel widened for its full length, September 12, 1911.
Dredge laid up for season, September 15, 1911.
Complete crew consisted of ten men.
Quantity excavated in channel, 20,271 cubic yards.
Excavated in harbour, 406 cubic yards.
Excavated up the lake, during two days, 395 cubic yards.
Total for season, 21,072 cubic yards.

Work would have been continued up to about the end of October or until the lake was frozen over, had the full amount of the appropriation been available. Usually the lake freezes over early in November, thus putting an end to work of this character for the season.

The expenditure for the fiscal year, 1911-12, was $29,591.22.

BRITISH COLUMBIA.

ALBERNI.

The dredge *Mastodon* left Victoria on May 11, and work was started at Alberni on May 20.

The work consisted in dredging a channel from deep water, in the Alberni canal, up the Somas river to Old Alberni. This channel was dredged 14 feet deep, and 150 feet wide, through the sand at the mouth. When that part of the river, that has defined banks, was reached, the width was reduced to about 100 feet, and at the wharf a turning basin was made, 500 feet long by 250 feet wide.

The total amount of material removed was 371,690 cubic yards.
The total cost was $48,818.51.

ARROW LAKES.

Work was commenced on the construction of the new dredge *Sheldrake,* to be used on the improvement of the narrows on Arrow lakes. From October 19 to December 23, the hull of the dredge and the coal-scow tender were launched, but owing to

severe weather, and the balance of the appropriation not being available, work was discontinued. The dredge was not completed at the end of the fiscal year but will be completed at an early date.

BANFIELD CREEK.

On September 16, 1911, work was started on building an approach to replace the temporary one put in last year, and a small landing, consisting of a float with a gangway leading to the main wharf, was put in at the south end of the wharf for the convenience of parties landing in small boats and launches at low tide. A 2-inch water-pipe was also put in, connecting with the water system at the cable station, for the use of the steamers calling.

The total expenditure was $742.51.

CHASE.

Chase is a town of 700 inhabitants, situated at the foot of Shuswap lakes, the source of the South Thompson river. The town is a terminal for all lake and river traffic and a supply point for places on the lakes which are rapidly becoming settled by farmers and fruit growers.

On September 11, work was commenced on the construction of a wharf of pile bent and stringer construction, and consists of a 16-foot approach extending outwards 616 feet to a pier-head, 26 by 65 feet, and a slip, at the outer or lake end, 50 feet long and 12 feet wide. The wharf was completed on November 28, and cost, together with a waiting and storeroom built on the pier-head, $8,310.68.

COLUMBIA RIVER.

The operations of the snag boat *Muskrat* extend in general over that portion of the Columbia river lying between the town of Windermere, to the south, and the town of Golden, to the north. Windermere being situated on the east shore of Windermere lake, and Golden at the junction of the Kicking Horse and Columbia rivers. The work for the most part, consists in keeping the river clear of driftwood and log jams; protecting the river banks from erosion by means of protective piling; mattressing, &c., and in generally keeping the river in navigagle condition.

Work of this nature was started on Monday, May 22, with a crew of five men. From May 22 to 30, the crew was employed in renewing the forward deck, overhauling engines and boilers, painting and setting up the deck engine. On May 31, the snag boat was moved up stream and work commenced, cutting out the most obstructive sweepers and overhanging trees along the banks of the river. This work was carried down stream to Golden and completed on June 13, when the boat was docked for repairs to the hull, which work of overhauling was completed on July 20.

With a crew of seven men, the snag boat left Golden on July 21 and proceeded up stream to Athalmer; the banks on the way up were cleared of all overhanging trees, driftwood, &e.

From July 26 to August 2, boat and crew were engaged in getting out piles, driving piles and building a wall to protect the banks of the river adjacent to the landing at Wilmer. August 3 to 10, it was employed in deepening the channel to Athalmer wharf. August 11 to 19, deepening channel of Columbia river opposite Toby creek. August 19 to 28, crew was engaged in repairing dam at Horse Thief creek; at this dam, new piles were driven and brush and stone added to the existing structure. August 29 to September 12, engaged in blasting rock to be used in strengthening existing dams. From September 13 to 19, inspecting work, and on

September 19 the *Muskrat* proceeded up stream to Redrock and No. 2 creek; at this point, the boat was employed until October 9 in building a dam across the channel of No. 2 creek; the completed dam is 192 feet long, 6½ feet wide and has an average depth of 3½ feet, the construction being of the usual type, on this stretch of the Columbia, *i.e.*, mattressing and piling with brush and stone filling.

On October 9, the snag boat proceeded to the mouth of the Spilimachene river and work was started on a temporary wing dam; this dam is approximately 250 feet long and serves to deflect the river into the main or steamboat channel, work was completed on October 17.

October 18 to 24, scraping off bar at Ten-mile creek. Ice was beginning to form and the balance of the week was employed in surveying the adjacent low lands to secure data for future work. On November 4, the snag boat was dismantled and laid up for the winter.

The *Nakusp* was employed in dredging a bar at the mouth of Cariboo creek, Arrow Lakes Narrows, at the end of last fiscal year. Work was continued on this bar from April 1 till April 12, during which time the channel was straightened and deepened to a depth of 7 feet below low water level. The channel is now some 1,200 feet long by 80 feet wide. The amount of material handled between the above dates was 2,766 cubic yards of small boulders and firmly embedded gravel, the cost, based on the daily operating and upkeep cost during the year was 11·2 cents per cubic yard.

On April 13, the dredge proceeded to Pingston creek, a point on the west shore of the Upper Arrow lake. The landing at Pingston creek is exposed to the prevailing winds on the lake, making the landing for steamers difficult. A slip owned by the Gibbons Lumber Company, extending from deep water to some 230 feet inshore, affords protection for boats calling at this point. The dredge *Nakusp* was employed from April 19 to April 28 in deepening this slip to provide entrance for boats during periods of lowest water levels and in widening it to provide additional mooring ground. The cut dredged between piers has now a length of 80 feet, a width of 75 feet at bottom and a uniform depth of 4 feet below low water level. In addition to the above work, a cut on the opposite side of slip and some 60 feet long was dredged back on a uniform slope for use during higher water periods. Extra mooring room was provided, for use during low water periods, by a cut 110 feet long and 30 feet wide, with a depth of 5 feet at low water elevation.

In deepening the slips and widening them, some 3,733 cubic yards of silt and gravel were removed.

On the completion of the work at Pingston Creek, April 28, the dredge proceeded to St. Leon and was laid up as the water was getting too high to do satisfactory work.

On September 26, the *Nakusp* was put in commission with a full crew and steamed to the Arrow Lakes Narrows, where she started digging on October 6 on the point of a bar extending westwards into the channel. This bar has a large yearly increment necessitating work of removal from time to time to provide turning room for the steamers at a very bad 'twist' in the channel. Moving down stream, a cut 200 feet wide was dredged to a depth of 9 feet below low water level. The current at this point is very swift and considerable trouble was experienced in holding the dredge in to the work. At this point, some 14,995 cubic yards of material were removed.

Work was completed at this point on November 21 and the dredge moved upstream to Cottonwood.

Dredging was started on several bars opposite Cottonwood Point on November 22 and has been continued there to date.

From November 22 to the end of the fiscal year, 41,435 cubic yards of gravel and clay were removed.

The Columbia River Narrows are situate about midway between Arrowhead and West Robson on the Arrow lakes, Kootenay county, therefore on the main waterway between the Crow's Nest and main line systems of the Canadian Pacific Railway.

One of the chief difficulties in navigating the Narrows was in handling the boats in the swift currents at that point. Surveys made before and after dredging operations show that the current has been reduced considerably throughout the length of the Narrows. At one point, the rate of flow was reduced from 8 to 4 miles per hour.

EDGEWOOD.

During the month of March, a movable storehouse, 12 by 20 feet, was erected on the Edgewood wharf at a cost of $148.50.

FRASER RIVER (LOWER).

Work was started on August 16 on the completion of No. 1 Wing Dam at Woodward's Slough. This consisted in strengthening the outer end by driving dolphins to prevent it from floating in and protect it from booms of logs which are towed in and out of the river, and brush and rock was placed in it to bring it up to the required level.

Repairs were also made to wing dams Nos. 1 and 2 at Annieville Bar. These were strengthened at the outer ends in the same manner.

On January 15, work was started on No. 2 dam. This is constructed in the same manner as No. 1; eight mattresses were sunk, and about ten bents of piles were driven for the dam.

On March 12, 1912, the camp was moved to Matsqui to do some protection work to the Government wharf, and groynes that were built there four years ago. This work was not completed on March 31, 1912.

Some small repairs were made to the protection work at Garry Point, and to the plant, such as scows and pile-driver.

The expenditure for the year was $27,025.14.

Repairs to Dams at Nicomen Slough.

Work on Nicomen Island dams began the 24th of September.

No. 4 dam was built in 1904, and required to be strengthened; this was done by flattening the slopes to 3 to 1 on the outside, and 2 to 1 on the inside, and the top made 12 feet wide. A dyke was built, this year, from the west end of dam to a public road, across blind sloughs, a distance of 1,292 feet. The dyke was built to protect dam from being damaged on inside slopes by water running through blind sloughs at very high water. The quantity of dirt (sand and silt) put in dam is 2,257 cubic yards, and in dyke, 6,446 cubic yards.

The dam and dyke are fenced in with the 'Ideal Wire Fencing,' nailed to cedar posts, ten feet apart.

No. 3 dam was also built in 1904, and was strengthened by flattening the slopes to 3 to 1 on the outside, and 2 to 1 on the inside, and the top made 12 feet wide.

The quantity of dirt (sand and silt) put in dam is 3,000 cubic yards.

The dam is fenced with the 'Ideal Wire Fencing,' nailed to cedar posts, ten feet apart.

No. 2 dam built in 1904 at the mouth of Queens Island slough, was washed away during the high water of 1908.

A new location was decided upon to build No. 2 dam, at the head of Nicomen Island, in Nicomen slough.

No. 2 dam is 470 feet long at the top, 346 feet at the bottom, 12 feet wide at the top, with an average height of 17 feet, and the slopes are 3 to 1 for the outside, and 2 to 1 for the inside.

The work on the dam was finished at the end of March.

The total quantity of dirt put in dam, gravel, sand and silt, is 12,900 cubic yards.

Work on No. 5 dam is going on, and will not be finished before the end of this month. The length of the dam on the top is 160 feet, at the bottom, 130 feet, and the top is 12 feet wide. The slopes are 3 to 1 on the outside, and 2 to 1 on the inside.

The average height is 15½ feet, and the total quantity of dirt, sand and silt, put in dam is about 6,400 cubic yards.

The total amount of money expended on work, &c., on the Nicomen Island dams at the end of March of this year is $12,720.61.

FRASER RIVER.

The dredge *Fruhling* was employed during the year on the Fraser river. The total amount of material removed was 669,100 cubic yards.

The principal work done was on the Sandheads, between No. 13 Black and No. 8 Red buoys, where there is trouble with the bars forming, as the river divides into two or three channels 520,000 cubic yards of material were removed.

114,400 cubic yards were removed from the point opposite the new wing dam at the mouth of Woodward's slough.

21,100 cubic yards were removed from the channel leading up to the wharf at Ladner.

7,200 cubic yards were removed from in front of the wharf at Westham Island, and 6,400 cubic yards from in front of the wharf at Dease Island, which makes a total of 669,100 cubic yards for the year's work.

On April 25, 1911, to May 18, 1911, the dredge *King Edward* worked in front of the canneries at Steveston. The length of this cut was 2,485 feet, 150 feet wide, and depth made was 10 feet at low water. The total material removed was 66,600 cubic yards.

June 20 to June 26, the cut, which was begun last year, immediately below the North Arm bridge at New Westminster, was finished. This cut was 275 feet long, 150 feet wide and 10 feet deep at low water. The amount of material removed was 5,050 cubic yards.

On June 27, work was started on cut about 2 miles below New Westminster, on the North Arm of the Fraser river, and the dredge worked there until September 1, with the exception of 15 days, from July 11 to 26, when some repairs were made. The total length of this cut was 1,703 feet, 150 feet wide and 10 feet deep at low water. The material removed amounted to 66,370 cubic yards.

The dredge worked at Eburne from September 11 to November 24, with the exception of 6 days for repairs in October. The length of cut made was 3,951 feet, 150 feet wide and 10 feet deep at low water. The total amount of material removed was 150,600 cubic yards.

From November 25 to December 11, the dredge was under repairs. From December 12 to December 28, the dredge worked just below the North Arm bridge at New Westminster, widening the original cut made there. This cut was 1,050 feet long, 150 feet wide and 10 feet deep at low water. The total amount of material removed was 27,400 cubic yards.

On January 25, work was started just below the North Arm Road bridge at Michels Island, and on January 31 work was stopped, as the dredge was ordered to False Creek, Vancouver.

The cut made was 801 feet long, 150 feet wide and depth made was 10 feet at low water. The total amount of material removed was 28,500 cubic yards.

The snag boat *Samson* was employed removing snags from the channel of the Fraser river between Chilliwack and the mouth. In all, 306 snags were removed.

When not employed snagging, the boat is used for making surveys and inspections when necessary. The services of the crew were also used in connection with

the borings taken in Vancouver harbour, last January, and the buoys marking the channel of the river are attended to by the *Samsom.* For this service the Marine Department pay at the rate of $50 per day. The total amount paid by the Marine Department was $2,225.

The total expenditure on Fraser river during the fiscal year for dredging and snagging was $71,060.06.

FRASER RIVER WHARF.

The work done under this appropriation consisted in the taking down of the old Government wharf at the mouth of the river, and rebuilding it about two miles further up the river, at the lower end of Woodward's Slough. The old wharf had to be abandoned, as the river was cutting out the piles and made it unsafe. This wharf is used to store the extra buoys, used in marking the channel of the river, and also for the dredge *Fruhling* and snag boat *Samson* to tie up at. The total cost was $2,144.24. The new wharf is 100 by 40 feet with a small approach.

HANEY.

Repairs were made to the Haney wharf, which consisted in the removal of the front piles and some of the superstructure at a cost of $1,899.36.

HARDY BAY.

The work done under this appropriation consisted in the renewal of the piles and braces in the wharf, which had been eaten away by the teredo.

The total expenditure was $1,452.95.

HARRISON RIVER.

This appropriation was made to reimburse the Brooks-Scanlon Lumber Company for work done on the Harrison river rapids. It was arranged that, as there was no appropriation last year, the Brooks-Scanlon Lumber Company should do this work under Government supervision, and they were to be reimbursed later. The work consisted in building a wing dam 865 feet long. This dam consisted in two rows of piles driven into the river. The space between the piles was filled with brush, and gravel was scraped out of the channel and piled upon the brush. The channel, at the lower end of the rapids, was also deepened by scraping.

This work had the desired effect of deepening the water on the rapids, but it was found necessary to increase the length of the dam and scrape more gravel upon the original part of the dam, which had sunk about one foot after the freshets, last summer.

On December 16, 1911, instructions were received to allow the Brooks-Scanlon Lumber Company to do some more work on the rapids to the extent of $8,000. They commenced work at the end of January, and completed the dam on April 6, 1912.

The dam was extended 485 feet, and about 2 feet more gravel placed on the whole length of that portion of the dam built last year.

The effect on the rapids is very marked, as now launches can go up the river all the year round, whereas, last year, it was nearly impossible to get up in a row-boat without hauling over the shallows. This will give the steamers a chance to haul logs down the river about one month earlier in the season, and from two to three months later.

The expenditure made on last year's appropriation was $11,115.

HARROP.

Harrop is a small settlement on the south shore of the west arm of Kootenay lake, Kootenay county. Small fruit ranches, in the immediate vicinity, ship small fruits and roots to outside markets and receive their supplies over the wharf now built at this point.

Work was started on the construction of a pile bent wharf on September 18; the completed wharf is 240 feet long, 26 wide and is built on a slope of 1 in 8½ to provide landing accommodation at any stage of water. The wharf was completed on November 25, and cost $4,484.03.

HOLLYBURN.

This appropriation was originally made to purchase the Hollyburn wharf and breakwater from the municipality of North Vancouver, but, before the purchase was completed, the outer end was wrecked by a storm.

The outer end, which consisted of a wooden crib filled with stone, was carried away by the action of the waves; the wooden crib having been eaten away by teredos. The stone filling was left there, and formed a bank that blocked the ferry landing. This was removed by the Vancouver Dredge & Salvage Company at a cost of $982.16.

The wharf and breakwater was rebuilt by the North Vancouver municipality on the understanding that the Government should reimburse them at some future date.

The expenditure during the fiscal year 1911-12, is $4,999.16.

KOKANEE.

At Kokanee there is a small settlement of fruit ranchers. The post office is situated on the north shore of the west arm of Kootenay lake. Some fruit is shipped from this point and considerable quantities of silver lead ore are transhipped to barges and boats to be carried to the various smelters.

Work was started on the construction of the wharf on January 10; the completed wharf is 372 feet long and of a uniform width of 32 feet. Owing to the heavy nature of the freight passing over it, this wharf is of a somewhat stronger construction than others built in the district. The wharf was completed on March 29, and cost $7,791.56.

KOOTENAY LAKE.

The new dredge *Bittern* for the Kootenay lake service was being fitted up during the early weeks of the fiscal year 1911-12. From May 1 to May 22, a half crew was engaged in setting spuds, boom, &c., and on May 23 she was put in commission and towed to Kootenay Landing at the south end of Kootenay lake.

Dredging was commenced in the Canadian Pacific Railway Company's slip on May 25. The object being to allow the steamers, which ply between this point and the city of Nelson, landing room at the wharf during periods of high water. Work was continued until August 10. A channel was dredged some 500 feet in length and 80 feet wide on a uniform grade giving a depth of 6 feet of water at the inner end of the slip at high water level. The material removed was mud and fairly stiff underlying clay. As the dump scow was not completed, most of the material had to be handled twice. 18,560 cubic yards were handled, high water precluding any further work being done at Kootenay Landing, the dredge was ordered back to Nelson, where she arrived in tow on August 11.

On November 1, the dredge was towed to Kootenay Landing, where dredging was commenced in the C.P.Ry. slip at the outer or low water end. This work is to serve

the same purpose as the dredging done earlier in the year, only at the low water levels. The dump left by the dredge earlier in the year, was also moved further back out of the slip. On December 15, the dredge moved out channel some 500 feet and started work on a turning basin and a channel to extend to the deep water of the lake. To date, this channel is 1,300 feet long and 30 feet wide and is dredged to a depth of 12 feet below low water level Between November 1 and March 31, 37,712 cubic yards of mud, sand and clay was handled by the dredge.

Kootenay Landing is a terminal of the boat line connecting the Crow's Nest system with the main line of the Canadian Pacific Railway. There is no settlement at the landing, but considerable transcontinental and local freight is handled over the wharf and in car-barges operated by the Canadian Pacific Railway.

LADYSMITH.

Repairs were made to the Ladysmith wharf, which cost $504.19.

NAAS RIVER.

Work was commenced on May 1 in removing snags from the fishing grounds at the mouth of the Naas river, and was continued until September 15, when the fishing stops.

The total expenditure was $3,194.33.

NANAIMO.

The guide piles were renewed, and necessary repairs were made to the farmer's landing.

The expenditure amounted to $1,299.21.

OKANAGAN RIVER.

The dredge *Heron* was engaged continuously from April 1 to October 31, on this service. A crew varying from five to seventeen men was employed in clearing the Okanagan river of various obstructions in the river bed, in clearing the banks of overhanging trees, brush &c., and in building wing dams and protective piling walls at various points along the river. The *Heron* is a combination dredge, derrick scow and pile driving outfit and was used, as necessity arose, for each of these purposes.

A channel some 500 feet in length and 30 feet wide was dredged to a depth of 2 feet below low water level immediately below the mouth of Beaver creek, the material overcast forming an effective check to the cutting of the west bank of the river at that point. A channel was also dredged through a bar which had formed at the mouth of the river. A wing wall some 700 feet in length now protects this point against further filling in by the action of the waves of Dog lake. Altogether some 4,565 lineal feet of protective walls were built along the banks of the river at different points.

Work was recommenced with the dredge and a crew of 6 men on February 12. Some minor repairs were made and actual dredging commenced on February 16. This work is being continued to date.

Dredging on the Okanagan river is more or less desultory in nature and consists for the most part in scraping over the shoal spots to keep a clear depth of 2 feet below the low water surface, the work being done with a half yard orange peel bucket .

During the fiscal year 1911-12, there were removed by dredging operations alone some 15,000 cubic yards of material, mud and gravel.

POWELL RIVER.

This appropriation was made to take over the breakwater built by the Powell River Paper Company at Powell river, in the Comox-Atlin district.

The work was done by Messrs. Palmer Bros. & Henning, who had a contract with the Powell River Paper Company to build it in accordance with plan prepared in this office, for the sum of $1.60 per cubic yard, quarry measurement, and was completed at the end of December last.

The breakwater is built 815 feet long, 12 feet on the top, which was 5 feet above high water mark. The last 40 feet is made 15 feet wide, and the breakwater is 15 feet longer than was originally intended to allow for any slip that might occur, and still have it the full length. In all 31,216 cubic yards of rock, quarry measurement, were put in the breakwater, which, at $1.60 per yard, amounts to $49,945.60; which, together with the price of the land, 1·45 acres at $100 per acre, amounting to $145, makes a total of $50,091.60 as the cost.

PROCTOR.

Proctor is a small settlement of about 150 inhabitants, and is situated on the south shore of the west arm of Kootenay lake, at the source of that body of water. It is a terminal of the branch line of the Canadian Pacific railway short line from Nelson, and considerable transhipment of freight takes place for different points on Kootenay lake.

From November 28 to December 23, new fenders and dolphin piles were driven, and the wharf repaired at a cost of $1,122.20.

SIDNEY.

On June 7 1911, instructions were received to commence repairs to Sidney wharf. Work was started on July 4, and the repairs were completed at the end of the month.

The work done consisted in renewing the fender piles and some of the bearing piles, which had been knocked out by steamers, &c. A new landing was built for small boats, and the first 15 bents from the shore end of the approach were rebuilt and extra bracing put in. These bents were damaged by driftwood during the winter storms.

The total cost was $1,145.75.

SKEENA RIVER.

The snag boat was employed during the season, commencing about April 1, until the end of September, in removing snags, &c., from the fishing grounds at the mouth of the Skeena river.

The total expenditure was $10,191.52.

SOOKE HARBOUR.

The rocks have been blasted and removed to low water mark, but it will take a dredge to remove the balance, and there may be a few points left that will require blasting, when the rocks are cleaned up with a dredge.

SORRENTO.

Sorrento is a settlement on the south shore of the Upper Shuswap lake, Yale-Cariboo county. There is no organized town but this point is surrounded by a number of small fruit ranches and is a transfer station for freight and supplies from the Canadian Pacific Railway and a number of small settlements on the north shore of the lake.

On December 30, work was commenced on the construction of a wharf of pile bent and stringer construction, and consists of a 16-foot approach extending outwards 310 feet to a pier head, 32 by 68·7 feet, and two slips, built on either side of it. The outer slip is 12 feet wide and 66½ feet long and provides a landing at any stage of water. Owing to the exposed position of the wharf and the consequent heavy seas prevailing at times, a small slip, 8 feet wide and 62 feet long, was built on the inner or protected side of the pier head to provide accommodation for the numerous small launches and boats of the district, during stormy weather. A small shelter and storehouse, 12 by 20 feet, was built on the pier head.

This wharf will become a point of call for steamers plying on the lakes, and a considerable quantity of freight will be handled over it.

The wharf was completed on February 23, and the completed structure cost $6,052.90.

SURF INLET.

Tenders were called for the construction of the Surf Inlet wharf. The successful contractor, M. Hyatt, started work February 12, 1912, and completed it March 9, 1912. This wharf is 40 feet by 60 feet, with an approach 200 feet long by 12 feet wide.

The amount of the contract was $4,150, and the total expenditure was $4,236.21.

STEWART.

No work was done, but $12,238.20 was paid the contractors, Gillett & Macdonald, for work done last year; they having agreed to wait until the money was voted when they took the contract to complete the approach.

The total amount paid was $12,359.13.

THOMPSON RIVER.

At the beginning of the fiscal year 1911-12, the dredge *Pelican* was engaged in cutting through Campbell's Bar on the South Thompson river. This bar is situated some 12 miles east of the junction of the North and South Thompson rivers. From April 1 to May 20, cuts aggregating 2,205 feet in length and averaging 50 feet in width were dredged to a depth of 4 feet below low water level. 12,420 cubic yards of sand, gravel and blue clay were removed.

On May 23, the *Pelican* was moved to Chase, some 20 miles further up stream, and the crew were employed from that date to July 18, on the following various works, building ways, caulking and repairing tender-scow, assembling a pile driver plant, re-decking scow and dredge, sheeting dredge and in generally overhauling and painting the entire outfit.

From July 18 to September 23, the dredge and crew were employed on improvements to the river opposite the town of Chase. A channel some 542 feet in length and 40 feet wide was dredged to a depth of 4 feet below low water level, at a point immediately above Chase Riffle. 5,367 cubic yards of gravel and sand were handled by the dredge. Between the above date, the crew of the *Pelican* were employed in building a retaining wall of piles and mattressing some 450 feet in length along one side of the dredged cut. The material removed in dredging was cast behind this retaining wall and the whole makes a substantial and permanent protection for the bank of the river at this point.

September 25 to November 18, the dredge and crew were employed in dredging a cut through Coburns Bar, a point on the Thompson opposite the town of Shuswap.

A cut, some 2,177 feet long, 50 feet wide and averaging 4·5 feet deep was dredged through this bar, giving a depth at low water of approximately 5·5 feet. 15,372 cubic yards of clay and gravel were handled.

Moving one mile further up stream, dredging was commenced on Shaw's Bar on November 23 and continued to December 28, when extreme cold weather and ice made further dredging impracticable. Work was resumed on the cut on January 19, with slush scrapers. The work was expedited by this means as advantage of the low water could be taken throughout the cold weather. A cut of 50 feet wide was scraped out to the water level and continued throughout the length of the bar. During this time, repairs were made to the dredge, wood was cut for fuel and everything put in readiness to start dredging as soon as the ice would permit. This was started on March 26, and is being continued at date. The actual amount of material removed by dredging and scraping between November 23 and March 31, was approximately 28,000 cubic yards.

Snagging.

An item was asked, as a contingent fund, to cover the expenses of removing snags and other obstructions which are yearly carried down the rivers during high water periods. At times, these snags, roots, &c., lodge at different points on the river and have to be removed as the necessity for doing so arises.

During the fiscal year 1911-12, some obstructions were removed, but less trouble was experienced from this cause than usual.

As a new boat, 125 feet in length, is being put on the service this year, on the North Thompson river, there is likely to be more work of this nature done during the coming fiscal year.

The expenditure for this service, during the past fiscal year, was $1,894.84. During July and August, a force of men was employed driving piles for protection work on the bank of the Thompson river opposite the town of Chase, and a small pile-bent landing wharf, with inclined slip, was built on the river opposite the Government offices for the use of the Government launch *Athel*.

TOFINO.

Repairs were started on Tofino wharf on August 21, 1911, and completed on October 16, 1911. These repairs consisted in the renewal of the main and fender piles in the wharf and approach.

The total expenditure was $998.

UNION BAY.

Small repairs were made to the Union Bay wharf at a cost of $339.46.

UPPER FRASER RIVER.

No work of importance has been done on the Upper Fraser river during the past fiscal year, excepting the removal of certain rocks obstructing navigation in the Fort George canyon; the channel has been made clear along the western bank of the river.

Camps have been built and the necessary equipment made ready for the continuation of the work, but owing to the isolated location of the work and the difficulty of getting in supplies, during the winter months, work was discontinued on November 29.

VANCOUVER HARBOUR.

The dredge *Mastodon* commenced work at the Narrows, Vancouver harbour, on December 20, 1911, and up to March 31 had removed 249,620 cubic yards of material. Dredging was commenced at the inner, or east, end of the cut.

False Creek.

Work was started on February 21, and on March 31 the dredge *King Edward* had moved forward 920 feet; the cut being 160 feet wide and 10 feet at low water. This cut is being made through the bar at the mouth of False Creek. The total amount of material removed was 35,000 cubic yards.

The total expenditure for dredging in Vancouver harbour for fiscal year 1911-12, is $45,126.56.

VICTORIA HARBOUR.

The dredge *Ajax* was employed during the year in deepening and widening the channel leading to the Inner harbour, also deepening the loading berths at the outer wharf, and removing rock that was broken by the Lobnitz rock-breaker, and blasted by the drill plant.

113,565 cubic yards of clay, &c., was removed from the channel between the chemical works and Laurel Point.

34,690 cubic yards of clay and gravel was removed from around the outer wharfs.

445 cubic yards of rock and 1,150 cubic yards of clay were removed from Platform rock.

40 cubic yards of rock and 225 cubic yards of clay were removed from rocks at Shoal Point.

2,965 cubic yards of rock and 1,290 cubic yards of clay were removed from Dredger rock; making a total yardage, for the year, of 154,910 cubic yards of all materials. This includes 540 cubic yards removed from in front of the Government wharf.

The dredge *Mud Lark* was employed deepening the Upper Harbour in Victoria, during the whole of the year, and the total amount removed was 90,670 cubic yards.

The Lobnitz rock-breaker was started to work on rock No. 1, off Shoal Point, in Victoria harbour, after preliminary tests, on October 9, and worked there until November 19. This was a very hard rock and slow progress was made.

From November 20 to January 7, the breaker was worked on Platform rock, which was a softer rock, and good progress was made, as shown by the dredgings. 445 cubic yards were removed.

On January 8, the breaker was removed to Rock No. 1 at Shoal Point until January 18, and on January 19 work was resumed on Platform rock until February 4.

From February 5 to March 31, the breaker was put to work on Dredger rock to break down some high points, which were discovered when dredging after the drill plant had finished.

The Lobnitz breaker has not done as much work as expected, on account of the delays that are caused by having to slack down the anchor wires when boats are passing, as the channel in Victoria harbour is narrow and the anchors have to be spread so much that the wires are in the way. If the breaker were rigged with spuds, a great deal of time would be saved, and it would be more convenient if the chisel were placed in the bow instead of in the centre of the scow.

Dredger Rock.

The drilling plant was employed from April 1, 1911, to March 24, 1912, in drilling and blasting on Dredger rock. At the latter date, the whole of the rock had been blasted to a depth of 20 feet at low water.

During the year, 992 holes were drilled, and the total length of holes drilled was 4,442·6 feet; making the average depth of hole drilled 4·48 feet; and 1,693 cubic yards of solid rock were blasted. All holes were drilled 2 feet below grade, and the amount of rock blasted is calculated as being taken out from one foot below grade. As this material was removed by the dredge *Ajax*, and the depth was found to vary from 17 feet to 22 feet, the high points are being broken down by the Lobnitz rock-breaker, and the rock will be cleaned up again by the *Ajax* when it is confidently expected that the rock will be found to be taken down to grade.

This rock was 240 feet long by 180 feet wide.

The dredge *Ajax* removed 4,170 cubic yards of loose broken rock from Dredger rock, but some of this was blasted last year.

The total expenditure on Victoria harbour dredging during the last fiscal year was $84,194.28.

DREDGING OPERATIONS.

The detail descriptions of work done by the different dredges will be found under the name of the place, in the body of the report.

Where dredging is described and classfied as 'A,' 'B' or 'C,' the explanation is, that solid rock or boulders of two cubic yards capacity or more are covered by Class 'A'; loose rock or small boulders by Class 'B,' while all other material, such as sand, clay, &c., are included in Class 'C.'

The following tables cover the work done by each particular dredge:—

NOVA SCOTIA.

Government Dredges.

CLASSIFICATION OF DISBURSEMENTS March 31, 1911 to March 31, 1912.

DREDGE 'NORTHUMBERLAND.'

Items.	April.	May.	June.	July.	August.	September	October.	November	December	January.	February.	March.	Grand Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	968 17	1,410 60	1,412 48	1,445 30	1,466 12	1,410 68	1,453 99	1,426 34	1,069 54	701 51	621 29	610 00	13,996 02
Coal	131 50	855 60	1,036 15	902 62	1,887 27	1,212 70	7 37	2,129 09	.....	.....	144 64	.....	8,306 94
Provisions	322 06	579 43	367 07	159 22	925 02	507 99	506 18	489 61	245 45	200 78	196 93	165 48	4,665 22
Stores	297 58	118 70	400 92	197 24	174 15	27 61	299 77	141 27	52 70	20 12	260 05	.....	1,990 11
Equipment	484 90	697 00	1,542 88	963 12	85 75	330 00	56 25	520 00	152 15	.....	2,519 00	555 11	7,906 16
Water	198 00	220 50	168 00	231 00	252 09	165 75	204 75	241 50	52 50	.....	.....	.....	1,734 00
Repairs	5,716 57	3,899 24	390 31	489 14	373 15	808 96	553 23	16 53	84 68	64 91	1,000 00	817 01	14,213 73
Pilotage	.....	.....	.....	.....	.....	.....	.....	.....	5 00	.....	.....	.....	5 00
Towage	.....	115 00	.....	.....	.....	20 00	.....	110 00	50 00	.....	.....	.....	295 00
Wharfage	15 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15 00
Contingencies	175 36	4 26	11 07	66 98	13 08	28 14	32 55	7 52	105 79	489 42	28 83	18 59	981 59
Totals	8,309 14	7,900 33	5,328 88	4,454 62	5,167 54	4,511 83	3,114 09	5,081 86	1,817 81	1,476 74	4,770 74	2,166 19	54,168 77
Working expenses	.....	4,001 09	4,938 57	3,965 48	4,803 39	3,702 87	2,560 86	5,065 33	1,733 13	1,411 83	3,770 74	1,349 18	37,302 46
Repairs, ordinary	.....	.....	154 24	489 14	373 15	355 38	553 23	16 53	.....	64 91	.....	.....	2,006 58
" extraordinary	8,309 14	3,899 24	236 07	.....	.....	453 58	.....	.....	84 68	.....	1,000 00	817 01	14,799 72
Totals	8,309 14	7,900 33	5,328 88	4,454 62	5,176 54	4,511 83	3,114 09	5,081 86	1,817 81	1,476 74	4,770 74	2,166 19	54,108 77

NOVA SCOTIA.— *Continued.*

Government Dredges.

CLASSIFICATION OF DISBURSEMENTS, March 31, 1911 to March 31, 1912.

DREDGE 'CANADA.'

Items.	April.	May.	June.	July.	August.	September	October.	November	December.	January.	February.	March.	Grand Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	700 03	908 36	852 50	838 70	836 72	832 21	816 01	830 75	746 65	382 00	478 27	478 00	8,709 20
Coal	76 78	223 75	284 05	504 22	378 75	242 63	262 48	290 40	241 90	.....	.....	143 73	2,648 69
Provisions	106 93	310 21	212 42	218 44	162 95	169 10	195 16	166 20	180 83	.....	.....	.....	1,722 14
Stores	309 58	100 18	9 18	15 13	42 66	3 26	.....	252 73	99 94	229 84	117 31	23 23	1,203 04
Equipment	5 00	.....	.....	94 13	12 00	.....	31 74	41 85	.....	.....	150 00	201 86	536 58
Water	6 00	20 00	43 00	35 50	44 95	36 50	37 50	51 50	28 50	.....	.....	.....	303 45
Repairs	788 78	1,705 28	.....	25 03	173 26	.....	.....	68 29	610 97	60 30	2,374 93	3,134 78	8,941 62
Pilotage	.....	30 00	53 00	27 00	.....	32 00	75 00	52 00	32 00	.....	.....	.....	301 00
Towage	.....	555 00	780 00	780 00	810 00	780 00	1,080 00	780 00	510 00	.....	4 00	400 00	6,479 00
Wharfage	4 80	4 40	.....	.....	.....	8 50	6 00	15 00	16 00	20 50	19 50	18 67	113 37
Contingencies	24 45	37 91	23 77	32 59	9 75	45 60	8 74	15 72	69 52	3 30	57 80	10 70	339 85
Totals	2,022 25	3,895 09	2,257 92	2,570 74	2,471 04	2,149 80	2,512 63	2,564 44	2,536 31	695 94	3,201 81	4,419 97	31,297 94
Working expenses	.....	1,478 12	2,257 92	2,545 71	2,297 78	2,149 80	2,512 63	2,496 15	1,925 34	635 64	826 88	1,285 19	20,411 16
Repairs, ordinary	.....	.....	.....	25 03	173 26	.....	.....	68 29	.....	60 30	.....	.....	326 88
" extraordinary	2,022 25	2,416 97	.....	.....	.....	.....	.....	.....	610 97	.....	2,374 93	3,134 78	10,559 90
Totals	2,022 25	3,895 09	2,257 92	2,570 74	2,471 04	2,149 80	2,512 63	2,564 44	2,536 31	695 94	3,201 81	4,419 97	31,297 94

DREDGE 'CAPE BRETON'

Wages	566 61	776 86	792 18	775 00	779 60	781 42	739 34	714 52	703 20	696 78	405 00	361 35	8,091 86
Coal	.....	59 00	234 75	.....	117 00	273 75	324 00	180 00	.....	381 75	66 00	.....	1,636 25
Provisions	164 32	182 43	256 28	289 53	304 95	200 23	324 01	229 95	210 62	190 07	116 77	70 55	2,539 71
Stores	28 40	.....	11 43	184 94	229 64	.....	.....	513 96	.....	.....	9 62	.....	977 99
Equipment	133 92	.....	298 80	766 81	501 73	433 89	79 38	477 65	419 48	.....	14 00	.....	3,125 66
Water	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Repairs	112 50	4,152 18	.....	3,174 37	.....	.....	1,383 23	.....	731 67	.....	.....	892 27	10,446 22
Pilotage	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Towage		2,050 00	2,680 00	2,610 00	2,720 00	2,750 00	2,750 00	2,382 00	2,516 00	2,907 00			23,365 00
Wharfage								25 90					25 90
Contingencies	80 86	20 40	39 95	8 41	20 20	15 36	27 90		140 29		33 15	16 90	403 42
Totals	1,086 61	7,240 87	4,313 39	7,809 06	4,673 12	4,454 65	5,627 86	4,523 98	4,721 26	4,175 60	644 54	1,341 07	50,612 01
Working Expenses		1,756 25	4,313 39	4,634 69	4,673 12	4,454 65	4,244 63	4,523 98	3,989 59	4,175 60	644 54	448 80	37,859 24
Repairs ordinary							1,383 23						1,383 23
" extraordinary	1,086 61	5,480 62		3,174 37					731 67			892 27	11,369 54
Totals	1,086 61	7,240 87	4,313 39	7,809 06	4,673 12	4,454 65	5,627 86	4,523 98	4,721 26	4,175 60	644 54	1,341 07	50,612 01

DREDGE 'GEORGE McKENZIE'

Wages	450 36	527 74	625 00	625 00	620 00	595 00	739 34	500 00	414 27	325 00	325 00	360 86	6,107 57
Coal	40 00	47 94	78 75			79 94	49 00		49 50				345 13
Provisions	52 93	154 17	103 10	118 19	109 09	118 94	137 60	113 85	91 48	47 83	61 10	50 91	1,159 19
Stores	58 24		34 79						2 05			132 08	227 16
Equipment	99 50				234 37			242 79			35 78		612 44
Water	3 50				3 00	3 00	12 80	6 00					28 30
Repairs	263 51	497 34			7 12	21 95	4 34	26 25	229 06	141 25	117 39	16 35	1,324 56
Pilotage					2 50								2 50
Towage				375 00	350 00	350 00		150 00	5 00				1,230 00
Wharfage													
Contingencies	9 30				11 94	1 65			45 43		19 25	2 64	90 21
Totals	977 34	1,227 19	841 64	1,118 19	1,338 02	1,170 48	943 08	1,038 89	836 79	514 08	558 52	562 84	11,127 06
Working Expenses		251 27	841 64	1,118 19	1,330 90	1,148 53	938 74	1,012 64	836 79	372 83	441 13	546 49	8,839 15
Repairs ordinary					7 12	21 95	4 34	26 25		141 25		16 35	217 26
" extraordinary	977 34	975 92									117 39		2,070 65
Totals	977 34	1,227 19	841 64	1,118 19	1,338 02	1,170 48	943 08	1,038 89	836 79	514 08	558 52	562 84	11,127 06

NOVA SCOTIA.—*Continued.*

Government Dredges.

Classification of Disbursements March 31, 1911 to March 31, 1912.

TUG 'LISGAR.'

Items.	*April.	*May.	* June.	*July.	*August.	September	‡October.	†Nov.	†Dec.	†Jan.	†Feb.	†March.	Grand Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages						545 00	545 00	545 00	488 88	285 00	285 00	335 00	3,028 88
Coal									416 28				416 28
Provisions						190 20	201 76	190 20	163 91	75 00	75 00	90 00	986 07
Stores								7 75	91 70		53 41	145 49	298 35
Equipment								38 40	71 94				110 34
Water									24 00				24 00
Repairs								11 25	131 35			936 65	1,079 25
Pilotage													
Towage													
Wharfage													
Contingencies						10 20	10 20	15 15	90 80	3 90	4 80	16 65	151 70
Totals						745 40	756 96	807 75	1,478 86	363 90	418 21	1,523 79	6,094 87
Working expenses						745 40	756 96	796 50	1,478 86	363 90	418 21	587 14	5,146 97
Repairs ordinary								11 25					11 25
" extraordinary												936 65	936 65
Totals						745 40	756 96	807 75	1,478 86	363 90	418 21	1,523 79	6,094 87

*Tug in New Brunswick.

†Tug left for Magdalen Islands Sept. 29, 1911,

‡Oct. pay rolls and other accounts mailed direct to St. John.

TUG 'RONA.'

Wages	248 05	275 00	288 15	289 20	287 40	280 67							1,668 47
Coal		61 24	37 00	22 50	42 13	16 25	25 20						204 32
Provisions	72 77	119 53	70 09	72 55	84 45	75 63	80 70						575 72
Stores	19 31	15 92	2 35										37 58
Equipment	15 30			77 13		22 50							114 93
Water		6 24		12 90	2 40	5 60	6 00						33 14
Repairs	582 33		16 10		16 00		77 60						692 03
Pilotage													
Towage													
Wharfage			16 00										16 00
Contingencies	6 11		6 58			2 26	5 00						19 95
Totals	943 87	477 93	436 27	474 28	432 38	402 91	194 50						3,362 14
Working expenses		477 93	436 27	474 28	416 38	402 91	116 90						2,324 67
Repairs ordinary					16 00		77 60						93 60
" extraordinary	943 87												943 87
Totals	943 87	477 93	436 27	474 28	432 38	402 91	194 50						3,362 14

NOVA SCOTIA.—*Concluded.*

Government Dredges.

SUMMARY OF WORK Performed in Nova Scotia and Total Expenses During Fiscal Year 1911-12.

Dredge.	No. of cu. yds. removed.	Operating expenses.	Repairs ordinary.	Repairs extraordinary.	Grand Total Cost.
		$ cts.	$ cts.	$ cts.	$ cts.
'Northumberland'	714,373	37,302 46	2,006 58	14,799 72	54,108 77
'Canada'	92, 90	20,411 16	326 88	10,559 90	31,297 94
'Cape Breton'	94,725	37,859 24	1,383 23	11,369 54	50,612 01
'Geo. McKenzie'	17,120	8,839 15	217 26	2,070 65	11,127 06
Tug 'Lisgar'	.....	5,146 97	11 25	936 65	6,094 87
Tug 'Rona'	.....	2,324 67	93 60	943 87	3,362 14
Totals	918,808	111,883 65	4,038 80	40,680 33	156,602 79

Classification and Quantities of Material removed by Departmental Dredges in Nova Scotia during Fiscal Year ending March 31st, 1912.

DREDGE 'NORTHUMBERLAND.'

Description of Material Dredged.	April.	May.	June.	July.	August.	Sept.	October.	November	December	January.	February.	March.	Grand Totals.
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Mud		20,265			74,285	72,766	65,975	3,214					236,505
Clay			1,000										1,000
Mud and rock		28,778	91,774	84,466	6,980		29,544	76,877					318,419
Gravel and rock				30,900	24,753								55,653
Mud & oyster shells					28,541	33,400	30,855						102,796
	Nil.	49,043	92,774	115,366	144,559	106,166	126,374	80,091	Nil.	Nil.	Nil.	Nil.	714,373

DREDGE 'CANADA.'

Mud		7,510	5,080		18,080	8,800	10,180	14,030	7,440				71,120
Mud and sand				680									680
Mud and stone			3,200	10,090									13,290
Mud, stone and sand				940	2,880								3,820
Sand and stone						2,100							2,100
Gravel and stone				1,000									1,000
Sand, stone & gravel					580								580
	Nil.	7,510	8,280	12,710	21,540	10,900	10,180	14,030	7,440	Nil-	Nil.	Nil.	92,590

DREDGE 'CAPE BRETON.'

Sand			5,990	8,120		1,600	8,400	2,875					26,985
Stone		2,000		1,400					2,075	2,600			8,075
Mud				5,380									5,380
Sand and mud			2,200										2,200
Stone and clay		8,850						500	500				9,850
Gravel				2,400									2,400
Sand and rock				1,260									1,260
Logs and rock				400									400
Gravel and mud				600	11,600								12,200
Shale, gravel and clay					8,600								8,600
Shale, gravel and mud					5,600	7,600							13,200
Stone, clay and sand							2,200						2,200
Clay and sand									1,975				1,975
	Nil.	10,85	8,190	19,560	25,800	9,200	10,600	3,375	4,550	2,600	Nil.	Nil.	94,725

CLASSIFICATION AND QUANTITIES of material removed by departmental Dredges in Nova Scotia during Fiscal Year ending March 31, 1912.

DREDGE 'GEORGE McKENZIE.'

Description of material dredged.	April.	May.	June.	July.	August.	September	October.	November	December	January.	February.	March.	Grand Totals.
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Sand			1,400	1,415	1,525	250							4,590
Stone				100		50							150
Mud						600	4,900	1,950					7,450
Sand and stone		50	1,085	835	2,180								4,150
Gravel and stone						440							440
Logs and stone						150							150
Logs and sand					150	40							190
	Nil.	50	2,485	2,350	3,855	1,530	4,900	1,950	Nil.	Nil.	Nil.	Nil.	17,120

Cost at localities dredged in Nova Scotia during Fiscal Year ending March 31, 1912.

Dredge.	Locality.	Date.	Time Dredging.	No. Cubic yards Dredged.	Cost.	Cost per Cubic yard.
			Hrs. Min.	$ cts.		$ cts.
'Northumberland.'	East River, Pictou Co	May 25 to November 21	1,772 30	714,373	27,927 20	0 3·90
	Preparing to go on slip	November 22 to December 1				
	Hauled	December 2				
'Canada.'	Still on slip	December 31				
	Shag Hbr., Shel Co	May 17 to June 17	160 50	12,590	3,415 49	0 27·13
	Towing and remantling	June 19 and 20				
	Lower East Pubnico, Yar. Co.	June 21 to July 20	153 25	13,240	3,239 08	0 24·46
	Coaling and towing.	July 21 to 24				
	Abbots Hbr. Yar. Co.	July 25 to September 9	277 50	28,660	3,696 47	0 12·90
	Dismantling and towing	September 11 and 12				
	Tusket Wedge, Yar. Co	September 13 to October 10	120 05	10,930	2,100 40	0 19·21
	Dismantling and towing	October 11 to 16				
	Remantling	October 17 and 18				
	Port Clyde, Shel. Co.	October 19 to December 15	291 50	27,170	4,764 31	0 17·54
	Dismantling and towing to Liverpool.	December 16 to 19				
	Laying up Dredge and repairing	December 20 to 31				
'George McKenzie.'	Arisaig, Ant. Co.	May 31 to August 9	376 ..	5,685	2,387 86	0 42
	Dismantling, towing and remantling	August 10 to 14				
	McNairs Cove, Ant. Co	August 15 to September 14	174 30	3,985	1,193 64	0 29·95
(Crew absent at election Sept. 20 to 23.)	Dismantling, towing, remantling and coaling	September 15 to 26				
	I. C. R. Wharf, Pictou	September 27 to November 18	166 ..	7,450	1,722 47	0 23·12
	Preparing for winter	November 18 to 30				
	Repairs	December 1 to 31				
'Cape Breton.'	Ottawa Brook, Vic. Co.	May 26 to June 5	75 ..	13,050	2,120 34	0 16·25
	Dismantling and towing	June 5 and 7				
'Crew absent 12 to 16 (election.)	Remantling	June 8 to 17				
	St. Anns, Vic. Co	June 19 to July 22	164 ..	22,550	7,267 29	0 32·23
	Dismantling, towing and remantling	July 24 to 27				
	Alder Point C. B. Co	July 28 to September 11	171 ..	36,400	7,052 00	0 19·37
	Dismantling, coaling and towing	September 12 to 15				
'Cape Breton'—*Con.*	Remantling	Sept. 16				
(Crew absent voting Sept. 18 to 23)	Sea too rough to work	" 25 to 27				
	St. Anns, Vic. Co	" 28 to Nov. 27	141 15	15,575	6,699 87	0 43.02
	Dismantling and towing	Nov. 28 to 30				
	Remantling	Dec. 1 and 2				
	North Sydney, C. B. Co.	" 4 to 21.	55 40	4,550	2,741 37	0 60.25
	Repairs	" 22 to Jan. 6 1912				
	North Sydney, C. B. Co	Jan. 8 to 24	38 30	2,600	2,211 45	0 85.05

SUMMARY OF COST OF WORK Performed by Dredges Operating in Nova Scotia during the Fiscal Year 1911-12, Exclusive of Extraordinary Repairs & Wintering.

Dredge.	Localities where work performed.	Nature of materials dredged.	Time consumed.	No. of Cubic yards	Operating Expenses.	Repairs Ordinary.	Total Cost.	Cost per Cubic yard.
					$ cts.	$ cts.	$ cts.	$ cts.
'Northumberland'..	East River, Pictou. Co.....	Mud, clay, rock, gravel & oyster shells.	May 25 to Nov. 21..	7,143 73	24,291 30	1,941 67	26,232 97	0 3.67
'Canada'.....	Shag Hbr., Shel. Co.....	.....	.....	.....	.....	.....	.....	.....
	Lower East Pubnico, Yar. Co.	Mud,.....	.....	.....	.....	.....	.....	.....
	Abbots Hbr. " "	Sand, ...	May 17 to Dec. 15...	925 90	15,906 82	226 58	16,173 40	0 17.47
	Tusket Wedge " "	Stone & gravel.....	.....	.....	.....	.....	.....	.....
	Port Clyde, Shel. Co.....	.....	.....	.....	.....	.....	.....	.....
'Cape Breton'.....	Ottawa Brook, Vic. Co.....	Sand, stone,.....	.....	.....	.....	.....	.....	.....
	St. Anns, " "	Mud, rock,.....	May 26	.....	.....	.....	.....	.....
	Alder Point, C. B. Co.....	Clay, gravel.....	to Jan. 24 1912.	947 25	31,216 67	1,383 23	32,599 90	0 34.41
	North Sydney, C. B. Co.....	Shale & logs.....	.....	.....	.....	.....	.....	.....
'Geo. McKenzie'...	Arisaig, Ant. Co.....	Mud, sand, ...	May 31 to Nov. 18..	171 20	5,974 08	59 66	6,033 74	0 35.24
	McNairs Cove, Ant. Co.....	Stone, gravel, & logs....	.....	.....	.....	.....	.....	.....
	I. C. R. Wharf, Pic. Co.....	.....	.....	.....	.....	.....	.....	.....

NOVA SCOTIA.

CONTRACT DREDGING.

DREDGING SEASON 1911.

Dredging done at Bridgewater, N.S., (Lahave River).
Under contract with W. J. Poupore & Co.
Name of dredge, *King Edward*.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A	154	5 50	Scow.
Class B			
Class C	45,405	0 55	Scow.
Total	45,559		

Amount paid contractor	$33,247 69
" " for inspection	294 19
Total expenditure	$33,541 88

Work commenced, June 30.
Work completed, October 4.
Depth of water made below zero, 18 feet.
NOTE.—Extra haul { 13 miles 3,856 cubic yards. / 14 miles 41,549 cubic yards.

DREDGING SEASON 1911.

Dredging done at Digby, N.S.
Under contract with Beazley Bros.
Name of dredge, *No. 2*.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A			
Class B			
Class C	99,994.25	0 40	Scow.
Total	99,994.25		

Amount paid contractor	$39,997 70
" " for inspection	302 50
Total expenditure	$40,300 20

Work commenced, June 28.
Work completed, November 29.
Depth of water made below zero, 18 feet.
NOTE.—Removing old crib-work, $183.40.

DREDGING SEASON 1911.

Dredging done at Grand Etang, N.S.
Under contract with V. T. Bartram.
Name of dredge, *Etang*.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A			
Class B			
Class C	63,318	0 37½	Scow.
Total	63,318		

Amount paid contractor	$23,538 37
" " for inspection	395 37
Total expenditure	$23,933 74

Work commenced, June 5.
Work completed, November 27.
Depth of water made below zero, 12 feet.
NOTE.—Of the above, 1,647 cubic yards were cast over at 25 cents.

DREDGING SEASON 1911.

Dredging done at Larry's River, N.S.
Under contract with Atlantic Dredging Co.
Names of dredges, *Dundonald* and *Quincy*.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A	37½	3 50	Place.
Class B			
Class C	38,622	0 45	Place.
Total	38,659½		

Amount paid contractor	$ 17,511 15
" " for inspection	242 01
Total expenditure	$ 17,753 16

Work commenced, November 27.
Work completed, January 5.
Depth of water made below zero, 8 to 10 feet.

DREDGING SEASON 1911.

Dredging done at Little Aldouane, N.S.
Under contract with G. G. Daigle.
Name of dredge. Hand dredging.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A			
Class B			
Class C	2,367.64	0 18	
Total	2,367.64		

Amount paid contractor	$ 426 16
" " for inspection	90 49
Total expenditure	$ 516 65

DREDGING SEASON 1911.

Dredging done at Lunenburg, N.S.
Under contract with W. J. Poupore & Co.
Name of dredge, *King Edward.*

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A			
Class B			
Class C	58,469	0 39½	Scow.
Total	58,469		

Amount paid contractor	$ 23,095 35
" " for inspection	152 09
Total expenditure	$ 23,247 44

Work commenced, May 15.
Work completed, June 17.
Depth of water made below zero, 17 feet.

DREDGING SEASON 1911.

Dredging done at Maders Cove, N.S.
Under contract with Beazley Bros.
Name of dredge, *No. 1.*

—	Quantity Removed.	Price per cubic yard.	Method of Measurement.
	cubic yards.	$ cts.	
Class A			
Class B			
Class C	2,868	40c	Scow.
Total	2,868		

Amount paid contractor	$1,147 20
" " for inspection	18 65
Total expenditure	$1,165 85

Work commenced, November 25.
Work completed, December 2.
Depth of water made below zero, 14 feet.

DREDGING SEASON 1911.

Dredging done at Mahone Bay, N.S.
Under contract with Beazley Bros.
Name of dredge, *No. 1.*

—	Quantity Removed.	Price per cubic yard.	Method of Measurement.
	cubic yards.	$ cts.	
Class A			
Class B			Scow.
Class C	119,994	40c	
Total	119,994		

Amount paid contractor	$47,997 60
" " for inspection	312 00
Total expenditure	$48,309 60

Work commenced, June 24.
Work completed, November 23.
Depth of water made below zero, 14 feet.

DREDGING SEASON 1911.

Dredging done at Petit de Grat, N.S.
Under contract with W. J. Poupore & Co.
Names of dredges, *Pontiac* and *Prince Guy*.

—	Quantity Removed.	Price per cubic yard.	Method of Measurement.
	Cubic yards.	$ cts.	
Class A			
Class B			
Class C	10,431.75	55c	Scow.
Total	10,431.75		

Amount paid contractor	$5,737 46
" " for inspection	165 80
Total expenditure	$5,903 20

Work commenced, May 29.
Work completed, August 12.
Depth of water made below zero, 13 feet.
NOTE.—Of above, 43¾ cubic yards large boulders and rock.

DREDGING SEASON 1911.

Dredging done at Yarmouth, N.S.
Under contract with Dominion Dredging Co.
Name of dredge, *No. 4*.

—	Quantity Removed.	Price per cubic yard.	Method of Measurement.
	Cubic yards.	$ cts.	
Class A			
Class B			
Class C	205,435.9	28c	Scow.
Total	205,435.9		

Amount paid contractor	$60,603 60
" " for inspection	673 94
Total expenditure	$61,277 54

Work commenced, May 10.
Work completed, October 14.
Depth of water made below zero, 18 feet.

PRINCE EDWARD ISLAND.

Classification of Disbursements of Dredges during the Year ending March 31, 1912.

'PRINCE EDWARD.'

Items.	April.	May.	June.	July.	August.	September	October.	November	December	January.	February.	March.	Grand Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	561 93	700 70	632 34	581 44	596 46	544 52	588 01	555 36	389 25	120 00	120 00	120 00	5,510 01
Coal				35 14			522 98	15 20	119 08		53 76		746 16
Provisions	63 05			415 60	156 24	220 01	72 05	527 01	123 50	30 00	30 00	30 00	1,667 46
Stores	18 45			184 90		24 04	657 06		80 72	88 69	58 48	58 86	1,171 20
Equipment				144 06	123 39				160 56			16 97	444 98
Water				34 20	191 30	52 50	59 00	58 50					395 50
Repairs			284 70	744 13			307 64			219 41		64 09	1,619 97
Pilotage						30 00		7 50					37 50
Towage	100 00	650 00		1,270 00	675 00	625 00	625 00	900 00					4,845 00
Wharfage													
Contingencies		4 00		35 73		25 45	10 00	35 99	42 33				153 50
Totals	743 43	1,354 70	917 04	3,445 20	1,742 39	1,521 52	2,841 74	2,090 56	915 44	458 10	262 24	289 92	16,591 28
Working expenses	118 45	1,354 70	632 34	2,701 07	1,742 39	1,521 52	2,534 10	2,099 56	915 44	88 69	112 24	75 83	13,896 33
Repairs, ordinary	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	307 64	Nil.	Nil.	69 41	Nil.	Nil.	377 05
" extraordinary	624 98	Nil.	284 70	744 13	Nil.	Nil.	Nil.	Nil.	Nil.	300 00	150 00	214 09	2,317 90
Totals	743 43	1,354 70	917 04	3,445 20	1,742 39	1,521 52	2,841 74	2,099 56	915 44	458 10	262 24	289 92	16,591 28

'MONTAGUE.'

Wages	791 32	550 67	580 90	809 75	565 00	570 27	565 00	565 00	565 00	149 00	156 00	222 00	6,089 91
Coal	68 33			551 63		133 48		284 60					1,038 04
Provisions	145 79	105 49		469 03	210 37	313 42	11 57	240 20	317 62	32 75	30 00	45 00	1,821 14
Stores	64 17				34 85	24 47	122 62	206 62	25 34			94 36	572 43
Equipment	47 48	17 50	4 00	267 33	17 00			104 83				97 34	555 48
Water				45 50	39 00	62 50	10 00		50 06		21 48		228 48
Repairs	448 96	1,187 00	181 78		765 72	174 50	395 59			34 12		354 60	3,512 27
Pilotage				83 05			98 00						181 05

Towage..	110 00	650 00		1,891 67	975 00	625 00	650 00	1,553 88	475 00				6,930 55
Wharfage..													
Contingencies				27 10	83 31	26 40	6 00		70 85	7 71		48 92	270 29
Totals	1,676 05	2,510 66	766 68	4,145 06	2,690 25	1,930 04	1,858 78	2,355 13	1,403 81	223 58	207 48	862 22	21,229 74
Working expenses	380 41	1,323 66	584 90	4,145 06	1,924 53	1,755 54	1,463 19	2,955 13	1,403 81	10 46	Nil.	186 65	16.133 34
Repairs, ordinary	312 00	Nil.	Nil.	Nil.	Nil.	174 50	395 59	Nil.	Nil.	20 82	Nil.	Nil.	902 91
" extraordinary	983 64	1,187 00	181 78	Nil.	765 72	Nil.	Nil.	Nil.	Nil.	192 30	207 48	675 57	4,193 49
Totals	1,676 05	2,510 66	766 68	4,145 06	2,690 25	1,930 04	1,858 78	2,955 13	1,403 81	223 58	207 48	862 22	21,299 74

DREDGE 'POWNAL'

Wages	347 67	377 93	423 88	405 00	423 29	407 22	263 00	190 00	197 50	193 00	3,228 49
Coal		180 51	115 19	119 98	118 75			16 08		23 95	574 46
Provisions		227 72	163 74	134 68	218 82	144 88	92 04	32 50	30 00	165 78	1,209 56
Stores		86 18	21 45		26 70		3 90	44 36	17 31		199 90
Equipment		61 32	345 42					21 98		90 00	518 72
Water		9 00	15 00	35 00	23 00		5 50				87 50
Repairs				307 60				206 25	588 96		1,102 81
Pilotage		10 00									10 00
Towage		737 50	625 00	625 00	625 90	650 00	570 00				4,032 50
Wharfage										25 00	25 00
Contingencies		18 97	20 60	24 31	17 10	30 00	18 09	16 80		27 60	173 47
Totals	347 67	1,709 13	1,930 28	1,650 97	1,452 66	1,232 10	952 53	527 91	833 77	525 33	11,162 41
Working expenses	347 67	1,709 13	1,930 28	1,343 37	1,452 66	1,232 10	952 53	49 21	Nil	302 33	9,319 28
Repairs ordinary	Nil	Nil	Nil	307 60	Nil	Nil	Nil	Nil	Nil	Nil	307 60
" extraordinary	Nil	Nil	Nil	Nil	Nil	Nil	Nil	478 76	833 77	223 00	1,535 53
Totals	347 67	1,709 13	1,930 28	1,650 97	1,452 66	1,232 10	952 53	527 97	833 77	525 33	11,162 41

CLASSIFICATION OF DISBURSEMENTS of Dredges during the Year ending March 31, 1912. —*Continued.*

DREDGE 'No. 4'

Items.	April.	May.	June.	July.	August.	September	October.	November	December	January.	February.	March.	Grand Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts	$ cts.	$ cts.	$ cts.
Wages					562 85	663 37	677 99	665 00	350 21	85 00	185 00	154 04	3,343 46
Coal								91 50					91 50
Provisions					177 25	210 00	213 00	210 00	86 50	30 00	30 00	30 00	986 75
Stores					50		15 84	55 23	7 88				79 45
Equipment					84 11	65 96		125 97					276 04
Water					3 60	89 55	96 64	81 10					270 89
Repairs							292 69	207 18					499 87
Pilotage													
Towage					2 50								2 50
Wharfage													
Contingencies					5 15	34 48	23 19	12 26	253 75	3 48			332 31
Totals					835 96	1,063 36	1,319 35	1,448 24	698 34	118 48	215 00	184 04	5,882 77
Working expenses					835 96	1,063 36	1,026 66	1,241 06	698 34	Nil	Nil	184 04	5,049 42
Repairs ordinary					Nil	Nil	292 69	207 18	Nil	Nil	Nil	Nil	499 87
" extraordinary					Nil	Nil	Nil	Nil	Nil	118 48	215 00	Nil	333 48
Totals					835 96	1,063 36	1,319 35	1,448 24	698 34	118 48	215 00	184 04	5,882 77

Classification and Quantities of Material removed by Dredges during the Year ending March 31, 1912.

DREDGE 'PRINCE EDWARD.'

Description of Material Dredged.	April.	May.	June.	July.	August.	September	October.	November	December	January.	February.	March.	Grand. Total
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Clay and mud				4,150			5,150						9,300
Clay and stone, rock						2,450							2,450
Sand, ordinary, and clay			1,215										1,215
Sand, very fine, and mud		4,635	585										5,220
Mud		4,567	3,435	8,710	11,100	800	1,100	4,800					34,512
Totals	Nil.	9,202	5,235	12,860	11,100	3,250	6,250	4,800	Nil.	Nil.	Nil.	Nil.	52,697

DREDGE 'MONTAGUE.'

Rock, mud and sand			4,000	2,500									6,500
Clay and sand					5,700	2,400							8,100
Sand, ordinary								2,289	4,000				6,289
Sand, very fine, and mud		4,019			9,600	3,200	3,420						20,239
Mud		8,962		7,800									16,762
Totals	Nil.	12,981	4,000	10,300	15,300	5,600	3,420	2,289	4,000	Nil.	Nil.	Nil.	57,890

DREDGE 'POWNALL.'

Clay				315		1,820							2,135
Clay and stone					765	630							1,395
Clay and rock			135										135
Sand, very fine, and mud				1,305	1,935		1,890						5,130
Mud							540	85					625
Totals	Nil.	Nil.	135	1,620	2,700	2,450	2,430	85	Nil.	Nil.	Nil.	Nil.	9,420

CLASSIFICATION and Quantities of Material removed by Dredges during the Year ending March 31, 1911. —*Concluded.*

DREDGE 'No. 4.'

Description of Material Dredged.	April.	May.	June.	July.	August.	Sept.	October.	November	December	January.	February.	March.	Grand Totals.
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Boulders and sand							1,830	630					2,460
Clay and sand					420	3,150							3,570
Sand, ordinary							630	1,680					2,310
Mud and sand							9,980	7,520					17,500
Totals	Nil.	Nil.	Nil.	Nil.	420	3,150	12,440	9,830	Nil.	Nil.	Nil.	Nil.	25,840

TOTAL cost at localities dredged during the Fiscal Year ending March 31, 1912.

'PRINCE EDWARD.'

Locality.	Date.	Actual Dredging Time.		Quantity.	Cost.	Cost per Cubic Yard.
		Hrs.	Min.	Yds.	$ cts.	$ cts.
Peake & Connolly Wharf, Charlottetown, Queens Co., P.E.I.	May 4 to May 28, 1911	144	45	7,717	2,437 87	0 31·59
Peake's Wharf, Charlottetown, Queens Co., P.E.I.....	May 29 to June 10, 1911.....	65	20	3,285	1,173 40	0 35·71
Falconwood Asylum Wharf, Queens Co., P.E.I.....	June 15 to July 12, 1911.....	132	07	9,395	2,916 53	0 31·05
Red Point Wharf, Queens Co., P.E.I	July 13 to Aug 8, 1911.	146	45	10,700	3,288 88	0 30·73
Haggerties Wharf, Queens Co., P.E.I.....	Aug. 9 to Aug. 30, 1911.....	110	02	7,300	2,318 89	0 31·76
Mount Stewart, Queens Co., P.E.I.....	Aug. 31 to Nov. 18, 1911.....	301	10	13,200	4,003 07	0 30·32
Rocky Point, Queens Co., P.E.I.	Nov. 20 to 25, 1911	6	30	1,100	550 16	0 50·01
DREDGE 'MONTAGUE.'						
Steam Nav. Co., Wharf Charlottetown, Queens Co., P.E.I..	May 1 to May 27, 1911.....	158	30	12,981	5,076 79	0 39·10
Alberton Ry Wharf, Prince Co., P.E.I	June 1 to July 12, 1911.....	158	00	6,500	2,803 42	0 43·11
Grand River, Kings Co., P.E.I..	July 13 to Oct. 7, 1911.....	361	00	29,780	10,907 43	0 36·61
Stanley Bridge, French River, P.E.I.....	Oct. 9 to Oct. 14, 1911.....	32	00	2,340	1,208 12	0 51·62
Souris Harbour, Kings Co , P.E.I.	Nov. 2 to Nov. 30, and Dec. 1 to Dec. 14. 1911.....	185	30	6,289	1,358 83	0 21·60
DREDGE 'POWNAL.'						
Charlottetown, Queens Co., P.E.I.	June 28 to July 7, 1911.....	36	30	450	448 01	0 99·56
Higgins Road, Prince Co., P.E.I.	July 17 to Nov. 15, 1911.....	369	00	8,970	10,780 06	1 17·95
'No. 4.'						
Amherst Harbour, Magdalen Islands, Gaspe Co., P.Q.....	Aug. 30 to Nov. 18, 1911 ...	256	00	25,840	8,302 59	0 32·13

PRINCE EDWARD ISLAND.

DREDGING SEASON 1911.

Contract Dredging.

Dredging done at Summerside, P.E.I.
Under contract with Dominion Dredging Co.
Name of dredge, *Delver.*

—	Quantity removed.	Price per cubic yd.	Method of Measurement.
Class A			
Class B			
Class C	6,341 00	35c	Scow.
Total	6,341 00	35c	

Amount paid contractor	$ 2,219 35
" " for inspection	47 00
Total expenditure	$ 2,266 35

Work commenced, November 14.
Work completed, November 24.
Depth of water made below zero—20 feet.

NEW BRUNSWICK.

Classification of Disbursements of the Dredges during the Year ending March 31, 1912.

DREDGE 'ST. LAWRENCE.'

Items.	April.	May.	June.	July.	August.	September	October.	November	December.	January.	February.	March,	Grand Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	634 33	730 80	712 24	655 00	644 61	652 33	674 45	653 54	539 25	273 98	191 22	180 00	6,541 75
Coal	.....	195 13	.....	632 13	290 72	165 33	595 18	140 00	.....	60 39	.....	.....	2,078 88
Provisions	182 56	199 11	.....	386 49	188 59	132 39	237 54	162 71	109 30	63 84	45 00	45 00	1,752 53
Stores	2 31	27 99	.....	148 84	6 53	.....	23 39	32 32	53 48	.....	.....	102 28	397 14
Equipment	.....	96 59	.....	160 87	.....	136 58	.....	9 30	.....	.....	.....	.....	403 34
Water	.....	67 50	.....	.....	.....	.....	.....	.....	87 70	.....	.....	.....	155 20
Repairs	1,205 67	958 48	595 79	505 91	1,145 44	242 38	175 02	.....	.....	205 48	766 76	.....	5,801 93
Pilotage	.....	.....	.....	.....	.....	.....	.....	.....	10 75	.....	.....	.....	10 75
Towage	.....	195 00	.....	1,400 00	1,040 00	560 00	960 00	820 00	.....	.....	.....	.....	4,675 00
Wharfage	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contingencies	17 00	23 29	.....	24 17	.....	22 67	19 75	9 93	13 65	24 94	6 49	23 14	185 03
Totals	2,042 87	2,493 89	1,308 03	3,913 41	3,315 89	1,911 68	2,685 33	1,527 80	814 13	628 63	1,009 47	350 42	22,001 55
Working expenses	19 31	1,467 91	712 24	3,407 50	2,170 45	1,669 30	2,510 31	1,527 80	814 13	66 01	Nil.	125 42	14,490 38
Repairs, ordinary	41 35	17 85	Nil.	505 91	746 99	242 38	175 02	Ni	Nil.	Nil.	Nil.	Nil.	1,729 50
" extraordinary	1,982 21	1,008 13	595 79	Nil.	398 45	Nil.	Nil.	Nil.	Nil.	562 62	1,009 47	225 00	5,781 67
Total	2,042 87	2,493 89	1,308 03	3,913 41	3,315 89	1,911 68	2,685 33	1,527 80	814 13	628 63	1,009 47	350 42	22,001 55

CLASSIFICATION OF DISBURSEMENTS of the Dredges during the Year ending March 31, 1912.—*Concluded.*

DREDGE 'NEW BRUNSWICK.'

Items.	April.	May.	June.	July.	August.	September	October.	November	December.	January.	February.	March.	Grand Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	526 02	550 49	511 61	495 00	492 22	546 00	267 37	54 75					3,443 46
Coal	269 56	100 59		438 25									808 40
Provisions	151 32	152 13		297 96	209 23	36 74	57 66	7 42					912 46
Stores	60 70	9 33		21 00	22 69		5 02						118 73
Equipment	83 43	14 34		70 49	241 58	59 02							468 86
Water	27 20				15 00								42 20
Repairs	139 95				169 99	112 79		811 96					1,234 69
Pilotage		9 00											9 00
Towage	496 00	670 46		1,288 93	1,055 00	1,300 00	6 00						4,816 39
Wharfage	10 00					4 00							14 00
Contingencies	20 67	1 95		3 80	2 35	5 42	18 35						52 54
Totals	1,784 85	1,508 29	511 61	2,615 43	2,208 05	2,063 97	354 40	874 13					11,920 73
Working expenses	1,568 65	1,508 29	511 61	2,615 43	2,038 06	1,951 18	354 40	62 17					10,609 79
Repairs, ordinary	111 81	Nil.	Nil.	Nil.	69 70	112 79	Nil.	811 96					1,106 26
" extraordinary	104 39	Nil.	Nil.	Nil.	100 29	Nil.	Nil.	Nil.					204 68
Totals	1,784 85	1,508 29	511 61	2,615 43	2,208 05	2,063 97	354 40	874 13					11,920 73

DREDGE "W. S. FIELDING."

Wages	1,320 62	1,794 60	1,501 82	1,550 87	1,610 00	1,696 06	1,431 00	1,381 60	1,539 15	1,296 11	1,201 34	1,383 76	17,706 93
Coal	870 23	662 95		659 49	769 64	219 01	296 91	619 84	207 61	243 25	16 00	353 86	4,918 79
Provisions	310 86	316 41		601 97	482 07	265 33	359 16	320 53	339 57	335 98	246 02	163 56	3,741 46
Stores	7 44	98 00		76 93	44 79	46 80	81 74	179 99	91 04	87 82	78 39	124 30	917 24
Equipment	243 36	607 00		487 69	350 91	44 94	145 60	2,749 41	140 35	85 18	19 73	160 79	5,034 96
Water	102 44	42 00		78 81	57 88			130 35		48 00	122 30	23 45	605 23
Repairs	2,218 74	442 26	449 75	614 20	235 94	583 97	330 92	594 83	324 47	621 52	11 50	2,637 39	9,465 49
Pilotage		95 00	135 00	120 00	130 00	148 50	130 00	110 00	130 00	10 00			1,008 50
Towage	266 50	1,153 12		1,707 50	1,012 50	637 50	604 00	680 00	1,462 50	7 00	14 00	7 00	7,551 62
Wharfage				533 75			1,338 75	262 50	271 25	17 50		227 75	2,651 50
Contingencies	3 22	31 77		10 32	12 01	46 07	5 89	10 64		51 86	35 70	18 78	226 26
Totals	5,343 41	5,243 11	2,086 57	6,441 53	4,795 74	3,688 18	4,723 97	7,039 69	4,505 94	2,804 22	1,744 98	5,500 64	53,827 98

Working expenses....	3,124 67	4,716 35	1,636 82	5,827 33	4,469 80	3,104 21	4,393 05	6,444 86	4,181 47	756 06	327 70	1,079 49	40,061 81
Repairs, ordinary....	268 02	321 11	12 45	614 20	235 94	583 97	330 92	594 83	324 47	Nil.	Nil.	266 31	3,552 22
" extraordinary	1,960 72	205 65	437 30	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	2,048 16	1,417 28	4,154 84	10,213 95
Totals.....	5,343 41	5,243 11	2,086 57	6,441 53	4,705 74	3,688 18	4,723 97	7,039 69	4,505 94	2,804 22	1,744 98	5,500 64	53,827 98

DREDGE 'RESTIGOUCHE.'

Wages.....	807 12	883 53	782 79	724 75	740 00	715 71	656 43	670 67	521 91	649 63	565 00	584 73	8,402 27
Coal.....	.....	376 42	.....	704 00	237 00	223 75	350 37	536 35	.....	.....	.....	.....	2,427 89
Provisions.....	205 27	195 19	.....	355 84	222 99	178 45	162 24	214 14	134 30	218 50	208 39	194 50	2,290 11
Stores.....	74 50	26 98	.....	308 80	.....	31 53	39 33	8 35	33 96	99 80	48 93	11 28	683 46
Equipment.....	358 99	192 14	.....	306 38	133 83	33 74	.....	104 10	.....	.....	35 49	62 85	1,227 52
Water.....	.....	28 75	.....	83 00	15 00	28 75	28 75	11 50	.....	.....	.....	.....	195 75
Repairs.....	244 73	33 89	.....	287 98	15 01	217 07	.....	.....	444 07	36 07	.....	1,756 84	3,035 66
Pilotage.....	.....	.....	.....	14 00	.....	.....	.....	38 90	.....	.....	.....	.....	52 90
Towage.....	5 00	.....	.....	.....	.....	.....	.....	.....	.....	85 00	.....	.....	90 00
Wharfage.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contingencies.....	50 67	5 79	.....	7 54	2 92	2 48	.....	8 56	3 52	.....	36 66	3 29	121 43
Totals.....	1,746 28	1,742 69	782 79	2,792 29	1,366 75	1,431 48	1,237 12	1,592 87	1,237 76	1,089 00	894 47	2,613 49	18,526 99
Working expenses...	431 36	1,742 69	782 79	2,504 31	1,351 74	1,214 41	1,237 12	1,592 87	58 28	Nil.	62 70	3 29	10,981 56
Repairs, ordinary ...	Nil.	Nil.	Nil.	287 98	15 01	217 07	Nil.	Nil.	Nil.	Nil.	Nil.	160 12	680 18
" extraordinary	1,314 92	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	1,179 48	1,089 00	831 77	2,450 08	6,865 25
Totals.....	1,746 28	1,742 69	782 79	2,792 29	1,366 75	1,431 48	1,237 12	1,592 87	1,237 76	1,089 00	894 47	2,613 49	18,526 99

CLASSIFICATION OF DISBURSEMENTS of the Dredges during the Year ending March 31, 1912.—*Continued*

DREDGE 'STONELIFTER No. 1.'

Items.	April.	May.	June.	July.	August.	September	October.	November	December	January.	February.	March.	Grand Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages			59 50	937 62	981 53	844 65	926 36	772 25	627 00	807 50	203 75	95 00	6,255 16
Coal			87 12	63 48	107 68		15 50	15 00	15 00	133 86			437 64
Provisions				152 50	155 00	150 00	159 80	150 00	155 00	155 00	60 00	30 00	1,167 30
Stores			12 10	5 00	6 56	6 82	32 79	43 24	43 54	23 12	69 40		242 57
Equipment			171 60	7 00	76 40	60 29						50 36	365 65
Water													
Repairs				189 08					30 05		82 99	600 23	902 35
Pilotage													
Towage				412 50									412 50
Wharfage												11 00	11 00
Contingencies				2 00	5 26	36	85	5 82		48	72	11 80	27 29
Total			330 32	1,769 18	1,332 43	1,062 12	1,135 30	986 31	870 59	1,119 96	416 86	798 39	9,821 46
Working expenses			270 82	1,580 10	1,332 43	1,062 12	1,135 30	986 31	840 54	1,119 96	333 87	73 16	8,734 61
Repairs, ordinary			Nil.	189 08	Nil.	Nil.	Nil.	Nil.	30 05	Nil.	82 99	600 23	902 35
" extraordinary			59 50	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	125 00	184 50
Totals			330 32	1,769 18	1,332 43	1,062 12	1,135 30	986 31	870 59	1,119 96	416 86	798 39	9,821 46

DREDGE TUG 'CANSO'.

Wages	617 12	721 41	633 91	615 00	611 82	615 00	610 64	600 76	581 62	445 00	328 81	445 00	6,826 09
Coal	381 80	217 40		611 32	269 29	163 51	275 64	573 50	132 59	170 19	16 00	11 40	2,622 64
Provisions	304 33	134 29		416 26	209 21	196 90	204 83	247 55	145 82	142 56	106 27	141 96	2,249 98
Stores	195 58			79 65	25 88	63 81		13 20	65 56	22 98	5 60	11 24	483 50
Equipment	477 21		7 57	49 11	26 79	107 45					25 58	399 80	1,093 51
Water	5 00	6 00						147 00				34 00	192 00
Repairs	84 84		2 52	44 44	33 19			42 68	109 36		387 95	976 52	1,681 50
Pilotage	68 00	54 50		20 47				10 00					152 97
Towage								30 00		25 00			55 00

Wharfage	7 50											1 75	9 25
Contingencies	3 30	27 15		9 78	13 03	7 92	11 75	5 50	26 62		1 37	10 95	117 37
Totals	2,144 68	1,160 75	644 00	1,846 03	1,189 21	1,154 59	1,102 86	1,470 19	1,061 57	805 73	871 58	2,032 62	15,483 81
Working expenses	2,059 84	1,160 75	641 48	1,801 59	1,156 02	1,154 59	1,102 86	1,427 51	952 21	805 73	105 24	402 82	12,770 64
Repairs, ordinary	84 84	Nil.	Nil.	44 44	33 19	Nil.	Nil.	42 68	109 36	Nil.	Nil.	399 80	714 31
" extraordinary	Nil.	Nil.	2 52	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	766 34	1,230 00	1,998 86
Totals	2,144 68	1,160 75	644 00	1,846 03	1,189 21	1,154 59	1,102 86	1,470 19	1,061 57	805 73	871 58	2,032 62	15,483 81

DREDGE TUG 'HERCULES'

Wages	409 50	453 26	565 00	393 50	385 00	415 15	674 08	836 25	385 00	164 53	195 50	252 32	5,129 09
Coal	147 91	189 07		253 08	192 45	97 59	81 61	37 98	100 55	70 20	16 90	69 12	1,256 46
Provisions	141 21	79 80	75 45	321 54	123 23	129 03	170 70	138 25	120 75	4 24	45 00	55 00	1,404 20
Stores	48 06	62 70		60 96	24 75	9 30	33 64	79 30	40 06		26 60	36 15	421 52
Equipment	81 55	49 13		57 01	8 00	48 40						31 60	275 69
Water	33 00	11 80		60 10			8 00						112 90
Repairs	29 88	6 79	31 45				205 83	484 13	27 37	127 75	126 65	34 65	1,076 50
Pilotage													
Towage				5 00									5 00
Wharfage	90				1 20							31 12	33 22
Contingencies		6 41		1 68	72	7 72	66						17 19
Totals	892 01	860 96	671 90	1,152 87	735 35	707 19	1,174 52	1,575 91	673 73	366 72	410 65	509 96	9,731 77
Working expenses	832 63	852 17	477 95	1,152 87	735 35	707 19	968 69	1,091 78	646 36	31 54	Nil.	180 99	7,677 52
Repairs, ordinary	25 59	8 79	Nil.	Nil.	Nil.	Nil.	205 83	484 13	27 37	Nil.	Nil.	Nil.	751 71
" extraordinary	33 79	Nil.	193 95	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	335 18	410 65	328 97	1,302 54
Totals	892 01	860 96	671 90	1,152 87	735 35	707 19	1,174 52	1,575 91	673 73	366 72	410 65	509 96	9,731 77

CLASSIFICATION OF DISBURSEMENTS of the Dredges during the Year ending March 31, 1912. —*Concluded.*

DREDGE TUG 'HELENA'

Items.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	Grand Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	580 00	737 17	616 62	580 00	580 77	606 46	650 00	621 02	615 00	229 78	306 51	373 09	6,496 42
Coal	440 98	.....	.....	819 44	500 89	48 50	417 41	254 30	262 62	8 00	.....	307 36	3,059 50
Provisions	168 13	163 69	.....	379 72	200 44	124 67	192 54	166 41	167 67	53 39	27 60	164 03	1,808 29
Stores	24 77	27 63	.....	159 69	8 70	19 43	41 96	24 76	39 21	34 03	.....	28 27	402 45
Equipment	236 44	32 86	.....	351 21	30 61	108 89	187 00	280 86	.....	43 44	39 08	158 07	1,468 46
Water	13 10	.....	.....	28 41	.....	.....	.....	.....	.....	.....	.....	.....	41 51
Repairs	.....	60 00	.....	128 08	265 63	88 78	54 13	.....	.....	165 99	.....	1,354 99	2,117 60
Pilotage	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Towage	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wharfage	1 50	.....	.....	50	.....	.....	.....	.....	.....	.....	.....	.....	2 00
Contingencies	3 82	31 76	.....	18 30	5 77	2 19	6 84	5 03	.....	.....	8 06	18 65	100 42
Totals	1,468 74	1,053 11	616 62	2,459 35	1,592 81	998 92	1,549 88	1,352 38	1,034 50	534 63	381 25	2,404 46	15,496 65
Working expenses	1,468 74	993 11	616 62	2,331 27	1,327 18	910 14	1,495 75	1,352 38	1,084 50	Nil.	41 84	634 38	12,255 91
Repairs, ordinary	Nil.	Nil.	Nil.	128 08	14 48	88 78	54 13	Nil.	Nil.	Nil.	Nil.	124 86	410 33
" extraordinary	Nil.	60 00	Nil.	Nil.	251 15	Nil.	Nil.	Nil.	Nil.	534 63	339 41	1,645 22	2,830 41
Totals	1,468 74	1,053 11	616 62	2,459 35	1,592 81	998 92	1,549 88	1,352 38	1,084 50	534 63	381 25	2,404 46	15,496 65

Classification and Quantities of material removed by Dredges during the Year ending March 31, 1912.

DREDGE 'ST. LAWRENCE.'

Description of Material Dredged.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	Grand Totals.
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Gravel and mud		3,990	1,050										5,040
Mud			5,670					3,570					9,240
Sand and gravel							5,040	4,410					9,450
Sand, ordinary			13,650	15,225	19,740	5,870							54,285
Sand, very fine, & mud						7,980	10,500						18,480
Mud and old wood		420											420
Totals	Nil.	4,410	20,370	15,225	19,740	13,850	15,540	7,980	Nil.	Nil.	Nil.	Nil.	96,915

DREDGE 'NEW BRUNSWICK.'

Gravel				4,715	3,913								8,628
Clay	2,623												2,623
Clay and stone		4,730											4,730
Sand, ordinary					645	2,064							2,709
Sand, very fine & mud		2,305	2,838	1,161									6,304
Mud	3,923	1,118	10,079	7,912	8,471								31,503
Totals	6,546	8,153	12,917	13,788	13,029	2,064	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	56,497

DREDGE 'W. S. FIELDING.'

Boulders and gravel							5,490	4,994					10,484
Gravel and mud		21,877	1,931	9,808	54,234								87,850
Clay and gravel						17,652	14,273	13,832					45,757
Stone and gravel					14,104	15,520			19,405				49,029
Sand, ordinary & mud	34,370	52,490	14,493	29,826									131,179
Sand, very fine	3,659												3,659
Mud			30,523	12,354	13,548								56,425
Totals	38,029	74,367	46,947	51,988	81,886	33,172	19,763	18,826	19,405	Nil.	Nil.	Nil.	384,383

CLASSIFICATION AND QUANTITIES of material removed by Dredges during the Year ending March 31, 1912.—*Continued.*

DREDGE 'RESTIGOUCHE.'

Description of Material Dredged.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	Grand Totals.
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Mud, sand and stone.	.....	.....	.....	.....	21,408	21,460	19,920	5,130	.....	.....	.....	.....	67,918
Mud, sand, gravel and stone.....	.....	17,740	27,010	33,645	.....	.....	.....	.....	.....	.....	.....	.....	78,395
Total.....	Nil.	17,740	27,010	33,645	21,408	21,460	19,920	5,130	Nil.	Nil.	Nil.	Nil.	146,313

DREDGE 'STONELIFTER NO. 1.'

Boulders.....	.....	.....	.....	114	121	14	106	72	19	28	.....	.....	474
Totals.....	.....	.....	.....	114	121	14	106	72	19	28	.....	.....	474

Classification of Disbursements of the Dredges during the Year ending March 31, 1912.

DREDGE 'NEW DOMINION.'

Wages.	April.	May.	June.	July.	August.	September	October.	November	December	January.	February.	March.	Grand Total.
	$	$	$	$	$	$	$	$	$	$	$	$	$
Wages	15 00	15 50	54 60										85 10
Coal													
Provisions													
Stores													
Equipment													
Water													
Repairs				5 20									5 20
Pilotage			23 00										23 00
Towage													
Wharfage			5 00										5 00
Contingencies				24 00									24 00
Totals	15 00	15 50	82 60	29 20									142 30
Working expenses	15 00	15 50	82 60	29 20									142 30
Repairs, ordinary	Nil.	Nil.	Nil.	Nil.									Nil.
" extraordinary	Nil.	Nil.	Nil.	Nil.									Nil.
Totals	15 00	15 50	82 60	29 20									142 30

TOTAL cost at localities dredged during the Fiscal Year ending March 31, 1912.

DREDGE 'ST. LAWRENCE.'

Locality.	Date.	Actual Dredging Time.	Quantity.	Cost.	Cost per Cubic Yard.
		Hrs. Min.	Yds.	$ cts.	$ cts.
Campbellton, Public Wharf., Restigouche Co., N.B.	May 20 to June 3, 1911	52 05	5,460	5,411 77	099·11
Traverse, Restigouche Co., N.B.	June 13 to Sept. 12, 1911	319 02	54,285	15,248 38	028·09
Campbellton, Site for New Whf., Restigouche Co., N.B.	June 5 to June 12, and Sept. 12 to Nov. 14, 1911	200 35	37,170	14,679 84	039·49

DREDGE 'NEW BRUNSWICK.'

Marble Cove, St. John, St. John Co., N.B.	April 12 to April 27, 1911	114 00	4,912	1,275 48	025·96
Hampton, Kings Co., N.B	April 28 to May 15, 1911	231 00	5,444	1,191 57	021·89
Mather's Island, Kings Co., N.B	May 16 to May 25, 1911	77 00	2,924	538 29	018·40
Hatfield's Point, Kings Co., N.B.	May 26 to July 14, 1911	328 30	20.184	2,960 08	014·66
Spoon Island, Queens Co., N.B.	July 15 to Aug. 7, 1911	166 30	11.853	1,848 00	015·59
Kingston Creek, Kings Co., N.B.	Aug. 8 to Aug. 21, 1911	117 00	8,471	1,147 31	013·54
Digby, Digby Co., N.B.	Aug. 26 to Sept. 16, 1911	55 00	2,799	3,030 13	011·86

DREDGE 'W. S. FIELDING.'

St John Harbour Channel, St. John Co., N.B.	April 4 to Nov. 30, and Dec. 1 to Dec. 28, 1911	797 35	384,383	81,886 99	021·30

DREDGE 'RESTIGOUCHE.'

Bathurst (Outside) Gloucester Co., N.B	May 15 to Nov. 11, 1911	623 15	146,313	18,635 90	012·73

DREDGE 'STONELIFTER No. 1.'

St. John Harbour Channel, St. John Co., N.B.	July 5 to Nov. 30, and Dec. 7 to Jan. 25, 1912	234 00	474	9,879 16	084·21

NEW BRUNSWICK.

Contract Dredging.

DREDGING SEASON 1911.

Dredging done at Buctouche Beach, N.B.
Under contract with Peter England.
Name of dredge, *Excavator*.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A			
Class B			
Class C	1,733½	36	Scow.
Total	1,733½		

Amount paid contractor ..... $ 416 04
" " for inspection 93 46

Total expenditure ..... $ 509 50

Work commenced, November 4.
Work completed, November 21.
Depth of water made below zero, 3 feet.

DREDGING SEASON 1911.

Dredging done at Burton Court House Wharf, N.B.
Under contract with Imperial Dredging and Construction Co.
Name of dredge (removal of old pier).

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yds.	$ cts.	
Class A		1½ days at $150 00	
Class B			
Class C			
Total			

Amount aid contractor ..... $ 225 00

DREDGING SEASON 1911.

Dredging done at Campbellton, N.B.
Under contract with A. & R. Loggie.
Name of dredge, *Gray Loggie.*

—	Quantity Removed.	Price per Cubic yards.	Method of Measurement.
	Cubic yards.	$ cts.	
Class A			
Class B			
Class C	10,550	50	Place.
Total	10,550		

Amount paid contractor	$ 6,066 25
" " for inspection	78 00
Total expenditure	$ 6,144 25

Work commenced, June 20.
Work completed, August 8.
Depth of water made below zero, 10 to 23 feet.
NOTE.—Extra haul, 7½ cents on above.

DREDGING SEASON 1911.

Dredging done at Cape Tormentine, N.B.
Under contract with General Construction and Dredging Co.
Name of dredge, *Bruiser.*

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yards.	$ cts.	
Class A			
Class B			Place.
Class C	27,370	0 40	
Total	27,370		

Amount paid contractor	$ 10,948 00
" " for inspection	135 04
Total expenditure	$ 11,183 04

Work commenced, July 4.
Work completed, September 12.
Depth of water made below zero, 18 feet.

DREDGING SEASON 1911.

Dredging done at Caraquet, N.B.
Under contract with W. J. Poupore & Co.
Name of dredges, *Prince Ito* and *Prince Louis*.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yards.	$ cts.	
Class A			
Class B			
Class C	63,872·92	0 30	Scow.
Total	63,872·92		

Amount paid contractor	$ 19,655 98
" " for inspection	354 13
Total expenditure	$ 20,010 11

Work commenced, May 31.
Work completed, October 11.
Depth of water made below zero, 18 to 22 feet.
Extra haul, 8,789·46; hauled 4½ miles.

DREDGING SEASON 1911.

Dredging done at Chatham, N.B., Public Wharf.
Under contract with Peter England.
Name of dredge, *Peter England*.

—	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
	Cubic yards.	$ cts.	
Class A			
Class B			
Class C	3,978·3	0 60	Scow.
Total	3,978·3		

Amount paid contractor	$ 2,384 98
" " for inspection	65 00
Total expenditure	$ 2,449 98

Work commenced, July 18.
Work completed, October 14.
Depth of water made below zero, 10 to 20 feet.

NOTE.—10 cubic yards cast over and left on wharf at 40 cents instead of 60 cents.

DREDGING SEASON 1911.

Dredging done at Chatham, N.B., Canada Dock.
Under contract with Peter England.
Name of dredge, *Peter England*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	1,618·1	50c.	Scow.
Total	1,618·1 cubic yards.		

Amount paid contractor	$	809 05
" " for inspection		63 25
Total expenditure	$	872 30

Work commenced, July 18.
Work completed, October 14.
Depth of water made below zero, 17 to 18 feet.
NOTE.—Picking up logs on dock, $12.75.

DREDGING SEASON 1911.

Dredging done at Dalhousie, N.B.
Under contract with A. & R. Loggie.
Name of dredge, *Gray Loggie*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	974·8	$5.00	Scow.
Class B			
Class C	15,794·0	23—¼	Scow.
Total	16,768·8 cubic yards.		

Amount paid contractor	$	9,493 75
" " for inspection		140 80
Total expenditure	$	9,634 55

Work commenced, July 17.
Work completed, October 7.
Depth of water made below zero, 12 to 20 feet.

DREDGING SEASON 1911.

Dredging done at Dipper Harbour, N.B.
Under contract with J. S. Gregory.
Name of dredge, *Keta and Asp.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class C	15,993·4	In channel... 65c.	
	25,462·8	In basin..... 50c.	
Total	41,456·2 cubic yards.	To December 30.	

Amount paid contractor	$ 27,127 12
" " for inspection	675 00
Total expenditure	$ 27,802 17

Work commenced, July 10.
Work completed, January 23, 1912.
Depth of water made below zero, 13 feet.

DREDGING SEASON 1911.

Dredging done at Leonardville, N.B. (Deer Island).
Under contract with Maritime Dredging and Construction Co.
Name of dredge, *Beacon Bar.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	None.		
Class B	None.		
Class C	7,230·1	50c.	Scow.
Total	7,230·1 cubic yards.		

Amount paid contractor	$ 3,615 05
" " for inspection	36 00
Total expenditure	$ 3,651 05

Work commenced, September 7.
Work completed, September 20.
Depth of water made below zero, 9 feet.

DREDGING SEASON 1911.

Dredging done at Loggieville, N.B.
Under contract with W. J. Poupore Co.
Name of dredge, *Prince Louis.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	5,842.½	33c.	Place.
Total	5,842.½ cubic yards.		

Amount paid contractor	$1,928 03
" " for inspection	
Total expenditure	

Work commenced, October 21.
Work completed, November 17.
Depth of water made below zero, 17 feet.

DREDGING SEASON 1911.

Dredging done at Loggieville, N.B. (Public Wharf).
Under contract with Eastern Dredging Co.
Name of dredge, *Hayward.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			Scow.
Class C	2,025	25c.	
Total	2,025 cubic yards.		

Amount paid contractor	$506 25
" " for inspection	68 50
Total expenditure	$574 75

Work commenced, October 24.
Work completed, October 26.
Depth of water made below zero, 22 feet.

DREDGING SEASON 1911.

Dredging done at Lord's Cove, N.B. (Deer Island).
Under contract with Maritime Dredging and Construction Co.
Name of dredge, *Beacon Bar.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	None.		
Class B	None.		
Class C	8,935	50c.	Scow.
Total	8,935 cubic yards.		

Amount paid contractor	$4,462 50
" " for inspection	21 00
Total expenditure	$4,482 50

Work commenced, September 22.
Work completed, September 30.
Depth of water made below zero, 10 feet.

DREDGING SEASON 1911.

Dredging done at Maugerville, N.B.
Under contract with Imperial Dredging and Construction Co.
Name of dredge, *Tantawanta.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	1,482·1	35c.	Scow.
Total	1,482·1 cubic yards.		

Amount paid contractor	$518 70
" " for inspection	30 00
Total expenditure	$548 70

Work commenced, August 16.
Work completed, August 21.
Depth of water made below zero, 13 feet.

DREDGING SEASON 1911.

Dredging done at Miramichi Bay, Horse-shoe and Lump, N.B.
Under contract with W. J. Poupore Co.
Name of dredge, *Prince Ito.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	130,002	45c	Scow.
Total	130,002 cubic yds.		

Amount paid contractor	$58,499 91
" " for inspection	$ 246 13
Total expenditure	$ 58,746 04

Work commenced, May 15.
Work completed, September 8.
Depth of water made below zero, 22 feet.

DREDGING SEASON 1911.

Dredging done at Miramichi Bay, N.B. (Grand Dune Flats).
Under contract with Eastern Dredge Co.
Names of dredges, *Hayward* and *Invader.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	500,985	11c	Scow.
Total	500,985 cubic yds.		

Amount paid contractor	$55,108 35
" " for inspection	$ 740 37
Total expenditure	$55,848 72

Work commenced, May 15.
Work completed, November 4.
Depth of water made below zero, 22 feet.

DREDGING SEASON 1911.

Dredging done at North-West Miramichi (Sinclair's Wharf), N.B.
Under contract with Peter England.
Name of dredge, *Excavator*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	7,019	45c.	Scow.
Total	7,019 cubic yds.		

Amount paid contractor	$3,145 05
" " for inspection	65 00
Total expenditure	$ 3,210 05

Work commenced, August 18.
Work completed, October 25.
Depth of water made below zero, 20 feet.

DREDGING SEASON 1911.

Dredging done at North-West Miramichi (Lawlor's Shore), N.B.
Under contract with Peter England.
Name of dredge, *Excavator*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	7,338·1	35c.	Scow.
Total	7,338·1 cubic yds.		

Amount paid contractor	$2,568 34
" " for inspection	130 00
Total expenditure	$2,698 34

Work commenced, June 27.
Work completed, August .
Depth of water made below zero, 5 feet.

DREDGING SEASON 1911.

Dredging done at Ox Island, N.B.
Under contract with Imperial Dredging and Construction Co.
Name of dredge, *Tantawanta.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.....	.....	.....	
Class B.....	.....	.....	
Class C.....	682·5 cubic yards.	24½c.	Place.
Total.....	682·5 cubic yards.		

Amount paid contractor.....	$167 26
" for inspection.....	27 98
Total expenditure.....	$195 24

Work commenced, November 2.
Work completed, November 6.
Depth of water made below zero, 10 feet.

DREDGING SEASON 1911.

Dredging done at Point du Chêne, N.B.
Under contract with General Construction Co.
Name of dredge, *Bruiser.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.	.....	.....	
Class B.....	.....	.....	
Class C,.....	11,058 cubic yards.	27c.	Scow.
Total	11,058 cubic yards.		

Amount paid contractor.....	$2,985 66
" for inspection.....	46 55
Total expenditure.....	$3,032 21

Work commenced, June 1.
Work completed, June 16.
Depth of water made below zero, 17 feet.

DREDGING SEASON 1911.

Dredging done at Raft Channel, N.B.
Under contract with Imperial Dredging and Construction Co.
Name of dredge, *Tantawanta.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	27,292·8 cubic yards.	24½c.	Place.
Total	27,292·8 cubic yards.		

Amount paid contractor	$6,686 74
" for inspection	174 00
Total expenditure	$6,860 74

Work commenced, August 24.
Work completed, October 31.
Depth of water made below zero, 11 feet.

DREDGING SEASON 1911.

Dredging done at Richibucto Bar, N.B.
Under contract with W. J. Poupore & Co.
Name of dredge, *Prince Ito.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Cless C.	12,213·4 cubic yards.	30c.	Scow.
Total	12,213·4 cubic yards.		

Amount paid contractor	$3,664 02
" for inspection	116 25
Total expenditure	$3,780 27

Work commenced, September 15.
Work completed, October 31.
Depth of water made below zero, 12 feet.

DREDGING SEASON 1911.

Dredging done at St. Andrews, N.B.
Under contract with Dominion Dredging Co.
Name of dredge, *Delver*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	136,788·6 cubic yards.	25c.	Scow.
Total	136,788·6 cubic yards.		

Amount paid contractor	$34,197 16
" for inspection	373 55
Total expenditure	$34,570 71

Work commenced, May 27.
Work completed, September 25.
Depth of water made below zero, 12 feet.

DREDGING SEASON 1911.

Dredging done at St. John Harbour, N.B.
Under contract with Maritime Dredging and Construction Co.
Name of dredges, *Cynthia, Beacon Bar* and *Iroquois*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	1,389,206·1 cubic yds.	39½c.	Scow.
Total	1,389,206·1 cubic yds. to March 31.		

Amount paid contractor	$548,736 44
" for inspection	6,498 55
Total expenditure	$555,234 69

Work commenced, April 15.
Work completed—not completed—working throughout year.
Depth of water made below zero, 32 feet.

DREDGING SEASON 1911.

Dredging done at St. Stephen, N.B.
Under contract with Maritime Dredging and Construction Co.
Name of dredge, *Beacon Bar*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
.....	.....	.....	
.....	.....	.....	
Class C.....	18,894 cubic yards.	49c.	Scow.
Total.....	18,894 cubic yards.		

Amount paid contractor.....	$10,108 73
" inspection.....	226 60
Total expenditure.....	$10,335 33

Work commenced, October 12.
Work completed, December 13.
Depth of water made below zero, 3 feet.

DREDGING SEASON 1911.

Dredging done at Scotchtown, N.B.
Under contract with J. S. Gregory.
Name of dredge, *Keta*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.....	.....	.....	
Class B.....	.....	.....	
Class C.....	15,717·4 cubic yards.	32½c.	Place.
Total.....	15,717·4 cubic yards.		

Amount paid contractor.....	$3,693 74
" for inspection.....	177 00
Total expenditure.....	$3,870 74

Work commenced, August 26.
Work completed, November 2.
Depth of water made below zero, 9 feet.

DREDGING SEASON 1911.

Dredging done at Shediac, N.B.
Under contract with General Construction and Dredging Co.
Name of dredge, *Bruiser*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	....	.....	.....
Class B	.....	.....	.....
Class C	20,693 cubic yards	38c.	Place.
Total	20,693 cubic yards		

Amount paid contractor	$8,173 74
" for inspection	56 23
Total expenditure	$8,229 97

Work commenced, September 27.
Work completed, November 18.
Depth of water made below zero, 12 feet.
NOTE.—Extra haul, 1½ cents.

DREDGING SEASON 1911.

Dredging done at Welchpool, N.B.
Under contract with Maritime Dredging and Construction Co.
Name of dredge, *Beacon Bar*.

	Quantity Removed	Price per Cubic Yard.	Method of Measurement.
Class A	None.	.....	.....
Class B	None.	.....	.....
Class C	9,595·5 cubic yards.	50c.	Scow.
Total	9,595·5 cubic yards.		

Amount paid contractor	$4,797 75
" for inspection	105 00
Total expenditure	$4,902 75

Work commenced, August 21.
Work completed, October 9.
Depth of water made below zero, 10 feet.

DREDGING SEASON 1911.

Dredging done at West Bay, N.B.
Under contract with Atlantic Dredging Co.
Name of dredge, *Quincey*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	118,690 cubic yards.	28c.	Scow.
Total	118,690 cubic yards.		

Amount paid contractor	$33,233 20
" for inspection	321 01
Total expenditure	$33,554 21

Work commenced, June 10.
Work completed, November 4.
Depth of water made below zero, 12 to 15 feet.

DREDGING SEASON 1911.

Dredging done at Wilson's Beach, N.B. (Campobello).
Under contract with Maritime Dredging and Construction Co.
Name of dredge, *Beacon Bar*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	None.		
Class B	None.		
Class C	2,690·2 cubic yards.	50c.	Scow.
Total	2,690·2 cubic yards.		

Amount paid contractor	$1,345 10
" for inspection	15 00
Total expenditure	$1,360 10

Work commenced, September 2.
Work completed, October 3.
Depth of water made below zero, 12 feet.

TOTAL cost at localities dredged in the Maritime Provinces and Quebec during the Fiscal Year ending March 31, 1912.

Dredge.	Locality.	Date.	Actual Dredging Time.	Quantity.	Cost.	Cost per Cubic Yard.
			Hrs. Min.		$ cts.	$ cts.
'St. Lawrence'	Campbellton Pub. Whf., Restigouche Co., N.B.	May 20 to June 2, 1911	52 05	5,460	5,411 77	0 99·11
"	Traverse, " "	June 13 to Sept. 12, 1911	319 02	54,285	15,248 38	0 28·09
"	Campbellton, site new Whf., " "	June 5 to 12, and Sept. 12 to Nov. 14, 1911	200 35	37,170	14,679 84	0 39·49
'Prince Edward'	Peake &Connolly Whf., Ch'town, Queen's Co., P.E.I	May 4 to 28, 1911	144 45	7,717	2,437 87	0 31·59
"	Peake Wharf, " " "	May 29 to June 10, 1911	65 20	3,285	1,173 40	0 35·71
"	Falconwood Asylum Whf., " " "	June 15 to July 12, 1911	132 07	9,395	2,916 53	0 31·05
"	Red Point Wharf, " "	July 13 to August 8, 1911	146 45	10,700	3,288 88	0 30·73
"	Haggerties Wharf, " "	August 9 to 30, 1911	110 02	7,300	2,318 89	0 31·76
"	Mount Stewart, " "	August 31 to Nov. 18, 1911	301 10	13,200	4,003 07	0 30·32
"	Rocky Point, " "	Nov. 30 to 25, 1911	6 30	1,100	550 16	0 50·01
'New Brunswick'	Marble Cove, St. John, St. John Co., N.B.	April 12 to 27, 1911	114 00	4,912	1,275 48	0 25·96
"	Hampton, King's Co., N.B	April 28 to May 15, 1911	231 00	5,444	1,191 57	0 21·89
"	Mathers Island, Kings Co., N.B.	May 16 to 25, 1911	77 00	2,924	538 29	0 18·40
"	Hatfield's Point, " "	May 26 to July 14, 1911	328 30	20,184	2,960 08	0 14·66
"	Spoon Island, Queens Co., "	July 15 to August 7, 1911	166 30	11,853	1,848 00	0 15·59
"	Kingston Creek, Kings Co., "	August 8 to 21, 1911	117 00	8,471	1,147 31	0 13·54
"	Digby, Digby Co., N.S	August 26 to Sept. 16, 1911	55 00	2,709	3,030 13	1 11·86
'W. S. Fielding'	St. John Harbour Channel, St. John Co., N.B	April 4 to Nov. 30 and Dec. 1 to 28, 1911	797 35	384,383	81,886 99	0 21·30
'Montague'	Steam Nav. Co. Whf, Ch'town, Queen's Co., P.E.I	May 1 to 27, 1911	158 30	12,981	5,076 79	0 39·10
"	Alberton Rly Wharf, Prince Co., P.E.I.	June 1 to July 12, 1911	158 00	6,500	2,803 42	0 43·11
"	Grand River, Kings Co., P.E.I	July 13 to October 7, 1911	361 00	29,780	10,907 43	0 36·61
"	Stanley Bridge, French River, P.E.I.	October 9 to 14, 1911	32 00	2,340	1,208 12	0 51·62
"	Souris Harbour, Kings Co., P.E.I	Nov. 2 to 30 and Dec. 1 to 14, 1911	185 30	6,289	1,358 83	0 21·60
'Restigouche'	Bathurst (Outside Bar) Gloucester Co., N.B.	May 15 Nov. 11, 1911	623 15	146,313	18,635 90	0 12·73
'Pownal'	Charlottetown, Queens Co., P.E.I	June 28 to July 7, 1911	36 30	450	448 01	0 99·56
"	Higgins Road, Prince Co., "	July 17 to Nov. 15, 1911	369 00	8,970	10,780 06	0 17·95
'No. 4'	Amherst Harbour, Magdalen Islds., Gaspe Co., P.Q	August 30 to Nov. 18, 1911	256 00	25,840	8,302 59	0 32·13
'Stone Lifter No. 1.'	St. John Harbour Channel, St. John Co., N.B	July 5 to Nov. 30 and Dec. 7 to Jan. 25, 1912	234 00	474	9,879 16	20 84·21
'New Dominion'					143 13	

Expenditure for Dredging in New Brunswick for the Forty Years ended March 31, 1912

County.	Locality.	For the Thirty-nine Years ended March 31, 1911.			For the Year 1911-12.			Total Quantity.	Total Cost.	Cost for each County
		Quantity.	Cost.	Cost for County.	Quantity.	Cost.	Cost for County.			
		Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts.
Charlotte	St. Andrews	111,270	24,432 50					11,270	24,432 50	
	" New Wharf	38,637	11,103 73					38,637	11,103 73	
	" Basin Eastern Entrance	97,042	19,557 59					97,042	19,557 59	
	St. George	12,720	5,593 97					12 720	5,593 97	
	L'Etête	4,145	1,187 27					4,145	1,187 27	
	Black Harbour	2,055	1,075 12					2,055	1,075 12	
	Leonardville	22,262	4,009 48	66,959 66				22,262	4,009 48	66,959 66
Gloucester	Bathurst	185,687	42,715 63		146,313	18,635 90		332,000	61,351 53	
	Caraquet	16,485	6,312 23					16,485	6,312 23	
	Shippegan	88,954	33,480 54	82,508 40			18,635 90	88,954	33,480 54	101,144 30
Kent	Richibucto	172,778	53,544 01					172,778	53,544 01	
	Cocagne	27,180	9,601 45					27,180	9,601 45	
	Buctouche	13,005	4,934 24					13,005	4,934 24	
	" Priest's Point	3,510	1,110 70					3,510	1,110 70	
	" Chapel	4,140	1,310 07					4,140	1,310 07	
	" Robertson's Wharf	45	14 23	70,514 70				45	14 23	70,514 70
Kings	Belle Isle	147,655	21,401 67					147,655	21,401 67	
	Kennebecasis River	116,270	20,081 83					116,270	20,081 83	
	Moss Glen	10,970	2,092 36					10,970	2,092 36	
	Westfield	1,300	362 19					1,300	362 19	
	Glenwood Wharf	28,600	2,417 77					28,600	2,417 77	
	Shamper's Wharf	83,385	11,095 38					83,385	11,095 38	
	Jenkin's Wharf	30,020	4,541 54					30,020	4,541 54	
	Cedars	29,700	11,948 64					29,700	11,948 64	
	Evandale	75	67 18					75	67 18	
	Oak Point	12,100	1,979 03					12,100	1,979 05	
	Victoria Wharf	21,700	2,448 40					21,700	2,448 40	
	Long Island	5,380	2,041 57					5,380	2,041 57	
	Flewelling Wharf	1,400	413 15					1,400	413 15	
	Reid's Point	980	455 56					980	455 56	
	Clifton Wharf	720	285 73					720	285 73	
	Whitehead	2,500	401 78					2,500	401 78	
	Murphy (Perry Point)	9,050	950 02					9,050	950 02	
	Sealy's Shoal	34,615	4,872 18					34,615	4,872 18	

EXPENDITURE for Dredging in New Brunswick for the Forty Years ended March 31, 1912.—*Continued.*

County.	Locality.	FOR THE THIRTY-NINE YEARS ENDED MARCH 31, 1911.			FOR THE YEAR 1911-12.			Total Quantity.	Total Cost.	Cost for each County
		Quantity.	Cost.	Cost for County.	Quantity.	Cost.	Cost for County.			
		Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts.
Kings—*Con.*	Hampton	30,280	4,938 27		5,444	1,191 57		35,724	6,129 84	
	Rothesay	130	22 66					130	22 66	
	Wanamakers	1,050	196 55					1,050	196 55	
	Hatfield's Point	500	106 53		20,184	2,960 08		20,684	3,066 61	
	Day's Landing	5,850	1,187 57					5,850	1,187 57	
	Grassy Island	25,910	7,382 72					25,910	7,382 72	
	Kingston Creek				8,471	1,147 31		8,471	1,147 31	
	Mather's Island			91,690 30	2,924	538 29	5,837 25	2,924	538 29	97,527 55
Northumberland	Horse Shoe, Miramichi	208,892	55,058 36					208,892	55,058 36	
	Outer Bar	29,935	7,965 31					29,935	7,965 31	
	Grand Dune	37,975	10,121 67					37,975	10,121 67	
	Gordon Flats	22,425	4,403 95					22,425	4,403 95	
	Neguac	6,300	6,969 76					6,300	6,969 76	
	Loggieville	13,201	4,888 04	89,407 09				13,201	4,888 04	89,407 09
Queens	Grand Lake	215,032	30,085 41					215,032	30,085 41	
	" McNair's Cove	20,440	4,522 82					20,440	4,522 82	
	Jemseg	87,230	17,190 06					87,230	17,190 06	
	Washademoak	65,675	8,073 65					65,675	8,073 65	
	" Cambridge Wharf	2,900	1,073 31					2,900	1,073 31	
	" Ackerley's Wharf	4,840	995 20					4,840	995 20	
	" Huestis Wharf	270	212 72					270	212 72	
	" Webster's Wharf	5,000	764 58					5,000	764 58	
	" Robertson's Wharf	5,750	422 14					5,750	422 14	
	" Colwell's Creek	8,290	2,557 52					8,290	2,557 52	
	Grimross, Middle Ground	12,040	3,274 99					12,040	3,274 99	
	Gagetown Creek Canal	45,935	7,739 97					45,935	7,739 97	
	Spoon Island	9,315	1,192 38		11,853	1,848 00		21,168	3,040 36	
	Ward's Shoal, Salmon River	46,625	4,993 59					46,625	4,993 59	
	Curley Shoals	36,625	3,369 16					36,625	3,369 16	
	Chipman and Briggs Corner	104,275	12,269 49					104,275	12,269 49	
	Upper Gagetown Wharf	1,700	1,104 90					1,700	1,104 90	
	McClure Shoals	39,525	4,556 66					39,525	4,556 66	
	Queen Coal Co., Newcastle	14,475	1,335 06					14,475	1,335 06	
	Hampstead	1,200	401 36					1,200	401 36	
	Belyea's Wharf	1,865	609 25					1,865	609 25	
	Maquapit Lake	17,000	3,957 81	110,702 01				17,000	3,957 81	112,550 01

Restigouche	Dalhousie	22,301	6,543 08					22,301	6,543 08	
	" McManus Contract	13,336	1,825 67					13,336	1,825 67	
	" Railway Wharf	8,460	1,203 48					8,460	1,203 48	
	" Ferry Landing	12,992	3,632 33					12,992	3,632 33	
	" Hilyards	19,250	4,846 50					19,250	4,846 50	
	Traverse	279,245	73,772 88		54,285	15,248 38		333,530	89,021 26	
	" Oak Bay	219,870	2,724 10					219,870	2,724 10	
	Campbellton, Govt. Wharf	58,915	25,710 22		5,460	5,411 77		64,375	31,121 99	
	" Contract	9,800	2,254 11					9,800	2,254 11	
	" Basin	18,375	10,354 33					18,375	10,354 33	
	" Site for new wf.			132,866 70	37,170	14,679 84		37,170	14,679 84	168,206 69
St. John	I.C.R. Terminus	212,224	52,633 18					212,224	52,633 18	
	Navy Island	39,899	13,361 95					39,899	13,361 95	
	Marble Cove	47,685	7,610 73		4,912	1,275 48		52,597	8,886 21	
	Murray Mills	27,555	3,681 41					27,555	3,681 41	
	Indiantown Wharf	1,615	192 83					1,615	192 83	
	Long Wharf	7,137	2,680 24					7,137	2,680 24	
	Miller and Woodman's	9,275	1,090 42					9,275	1,090 42	
	Hayford and Stetson	8,015	942 29					8,015	942 29	
	Indiantown Wharf	450	52 90					450	52 90	
	Adams Wharf	7,315	3,247 29					7,315	3,247 29	
	Anchor Line Wharf	4,695	996 81					4,695	996 81	
	Dominion Atlantic Wharf	15,525	4,484 72					15,525	4,484 72	
	St. John Winter Berths	496,378	102,105 83					496,378	102,105 83	
	" Harbour Channel	1,175,078	225,085 63	384,383	81,886 99			1,559,955	316,851 78	
				474	9,879 16					
	Purves and Murchie Mills	675	142 57					675	142 57	
	McAvity's Wharf	4,110	606 88					4,110	606 88	
	Lawton's Wharf	1,570	101 46					1,570	101 46	
	Thorne Wharf	1,980	249 02					1,980	249 02	
	Maritime Nail Works	1,425	224 52					1,425	224 52	
	Cushing's Mills	33,150	2,222 69					33,150	2,222 69	
	Hilyard Brothers	2,645	958 06					2,645	958 06	
	Kennebecasis River	2,045	604 37					2,045	604 37	
	Partridge Island	4,650	2,294 22					4,650	2,294 22	
	" channel for water pipe	8,215	5,173 82	430,743 84				8,215	5,173 82	523,785 47
Sunbury	Oromocto	401,572	67,827 26					401,572	67,827 26	
	McLean Wharf	625	181 59					625	181 59	
	Ox Island	51,800	5,266 50					51,800	5,266 50	
	French Lake	25,475	3,787 49					25,475	3,787 49	
	Bent's Wharf, Maugerville	2,310	428 44					2,310	428 44	
	Upper Sheffield	3,830	425 15	77,916 43				3,830	425 15	77,916 43
Westmoreland	Point du Chene	182,980	142,162 18					182,980	142,162 18	
	Cape Tormentine	35,120	9,004 92					35,120	9,004 92	
	Port Elgin	30,895	9,008 83	60,255 93				30,895	9,008 83	60,255 93
York	Fredericton	126,365	21,679 06					126,365	21,679 06	
	St. Marys	15,570	6,827 36					15,570	6,827 36	
	Gibson	30,395	4,379 52					30,395	4,379 52	
	Naashwoak	1,600	435 22					1,600	435 22	

EXPENDITURE for Dredging in New Brunswick for the Forty Years ended March 31, 1912.—*Concluded.*

County.	Locality.	FOR THE THIRTY-NINE YEARS ENDED MARCH 31, 1911.			FOR THE YEAR 1911-12.			Total Quantity.	Total cost.	Cost for each County.
		Quantity.	Cost.	Cost for County.	Quantity.	Cost.	Cost for County.			
		Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts.
York—*Con.*	Fisher and Chestnut Shoals	8,200	1,547 12					8,200	1,547 12	
	Canada Eastern Ry. Wharf	3,770	1,013 98					3,770	1,013 98	
	Springhill, Chapel and Russel Bars	96,295	24,386 78					96,295	24,386 78	
	Robertson Bar	6,965	1,717 16					6,965	1,717 16	
	Douglas Boom	14,235	1,512 87	63,490 07				14,235	1,512 87	63,499 07
	N.B. Equipment		1,591 12	1,591 12					1,591 12	1,591 12
	"New Dominion" Dismantling and care of Plant		1,609 32	1,609 32		143 13	143 13		1,752 45	1,752 45
Digby Co., N.S.	Digby				2,709	3,030 13	3,030 13	2,709	3,030 13	3,030 13
		6,103,378	1,280,264 57	1,280,264 57	684,582	157,76 03	157,876 03	6,787,960	1,438,140 60	1,438,140 60

EXPENDITURE for Dredging in Prince Edward Island for the Forty years ended March 31, 1912.

Kings	Grand River	83,870	19,333 34		29,780	10,907 43		113,650	30,240 77	
	Montague River	182,295	36,547 47					182,295	36,547 47	
	Murray Harbour South	105,903	20,140 56					105,903	20,140 56	
	Sturgeon	16,026	6,066 27					16,026	6,066 27	
	St. Mary's Wharf	29,963	4,752 55					29,963	4,752 55	
	Georgetown Railway Wharf	9,776	6,595 13					9,776	6,595 13	
	" Queen's Wharf	2,205	1,328 80					2,205	1,328 80	
	Cardigan Bridge	40,837	10,103 95					40,837	10,103 95	
	Newport	3,240	917 82					3,240	917 82	
	Souris	74,325	23,699 16		6,289	1,358 83		80,614	25,057 99	
	Murray River	70,997	21,736 52					70,997	21,736 52	
	" Railway	5,926	1,860 30					5,926	1,860 30	
	Morell	43,335	11,972 59					43,335	11,972 59	
	Annandale Public Wharf	11,800	3,809 47	168,863 93			12,266 26	11,800	3,809 47	181,130 19
Queens	Charlottetown				450	448 01		450	448 01	
	" Railway Wharf	125,391	33,956 60					125,391	33,956 60	
	" Pownal	68,620	18,146 48					68,620	18,146 48	
	" Ferry	10,075	2,006 99					10,075	2,006 99	
	" Steam Nav. Co	19,818	7,581 23		12,981	5,076 79		32,799	12,658 02	
	" Connolly Wharf	9,978	4,409 68					9,978	4,409 68	

	" Peake Bros	13,995	5,856 02		3,285	1,173 40		17,280	7,029 42		
	" Queen St., Slip	3,915	1,109 03					3,915	1,109 03		
	" Geo. Peak's Wharf	6,885	2,232 03					6,885	2,232 03		
	" Pools Wharf	12,240	1,609 95					12,240	1,609 95		
	" McMillan Wharf	6,615	1,320 13					6,615	1,320 13		
	" Dom. Blds. Sewer	5,355	1,146 68					5,355	1,146 68		
	" Public Sewerage	2,880	679 12					2,880	679 12		
	" Geo. Full's Wharf	11,550	3,001 96					11,550	3,001 96		
	" Carvell Bros	2,880	798 04					2,880	798 04		
	" Falconwood Asylum Wharf	27,540	7,864 45		9,395	2,916 53		36,935	10,780 98		
	Webster's Corner, East River	203	43 47					203	43 47		
	Crapaud, Victoria	184,250	60,664 84					184,250	60,664 84		
	Pownal Bay	43,465	10,380 28					43,565	10,380 28		
	Red Point	82,920	13,426 13					82,920	13,426 13		
	Vernon River	32,710	11,301 95					32,710	11,301 95		
	Wood Islands	8,405	11,801 57					8,405	11,801 57		
	Nine Mile Creek	45,870	13,307 73					45,870	13,307 73		
	Hickey Wharf	750	150 51					750	150 51		
	Carrs Point	12,165	2,441 28					12,165	2,441 28		
	Pinette	19,325	5,540 37					19,326	5,540 37		
	Fort Augustus	3,195	631 68					3,195	631 68		
	Southport Ferry	45,300	7,508 75					45,300	7,508 75		
	Red Point	7,161	3,879 60		10,700	3,288 88		17,861	7,168 48		
	North Rustico	13,536	4,775 38					13,536	4,775 38		
	South Rustico	11,649	4,109 67					11,649	4,109 67		
	Gauthiers Creek	17,847	8,305 50					17,847	8,305 50		
	Malpeque	28,575	3,483 32					28,575	3,483 32		
	French River	41,671	13,311 46		2,340	1,208 12		44,011	14,519 58		
	Bay View	4,095	1,912 87					4,095	1,192 87		
	Wedlocks	1,260	520 48					1,260	520 48		
	Belfast, Halliday's Wharf	22,185	7,125 66					22,185	7,125 66		
	Marine & Fisheries Wharf	27,155	7,193 89					27,155	7,193 89		
	Peake and Queen's Dock	4,860	1,586 60					4,860	1,586 60		
	Peake and Connolly Wharf				7,717	2,437 87		7,717	2,437 87		
	Hagerty's Wharf				7,300	2,318 89		7,300	2,318 89		
	Mount Stewart				13,200	4,003 07		13,200	4,003 07		
	Rocky Point			285,101 38	1,100	550 16	23,421 72	1,100	550 16	308,523 10	
Prince	Summerside	156,636	44,348 07					156,636	44,348 07		
	Hurd's Point Pier	65,505	14,315 49					65,505	14,315 49		
	Tignish	11,387	13,005 45					11,387	13,005 45		
	Cascumpec	1,157	538 40					1,157	538 40		
	Cape Traverse	16,740	5,105 89					16,740	5,105 89		
	Holeman's Wharf	14,975	2,795 96					14,975	2,795 96		
	Bedeque	28,350	3,955 26					28,350	3,955 26		
	Railway Wharf	14,345	3,807 98					14,345	3,807 98		
	Alberton Railway Wharf				6,500	2,803 42		6,500	2,803 42		
	Higgins Road			87,872 50	8,970	10,780 06	13,583 48	8,970	10,780 06	101,455 98	
		1,968,432	541,837 81	541,837 81	120,007	49,271 46	49,271 46	2,088,439	591,109 27	591,109 27	

Expenditure for Dredging in Quebec for the Forty years ended March 31, 1912.

From Appropriation Maritime Provinces.

County.	Locality.	For the Thirty-nine Years ended March 31, 1911.			For the Year 1911-12.			Total Quantity.	Total cost.	Cost for each County.
		Quantity.	Cost.	Cost for County.	Quantity.	Cost.	Cost for County.			
		Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts.	Cubic yards.	$ cts.	$ cts
Magdalen Isl'nds								6,800	2,392 92	
Co. Gaspé	House Harbour	6,800	2,392 92					26,335	8,544 64	10,937 56
" "	Amherst Harbour	495	242 05	2,634 97	25,840	8,302 59	8,302 59	2,587	825 47	825 47
Temiscouta	River du Loup	2,587	825 47	825 47				8,123	3,997 59	3,997 59
Rimouski	Rimouski	8,123	3,997 59	3,997 59				17,010	7,465 70	7,465 70
Bonaventure	Mission Point	17,010	7,465 70	7,465 70				7,770	3,225 80	3,225 80
"	Between Mission Point and Campbellton	7,770	3,225 80	3,225 80						
		42,785	18,149 53	18,149 53	25,840	8,302 59	8,302 59	68,625	26,452 12	26,452 12

QUEBEC AND ONTARIO.

GOVERNMENT DREDGES.

Annual Report from April 1, 1911, to March 31, 1912.

DREDGE 'CHALLENGE'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date.		Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
	From	To				
					$ cts.	Cts.
Rockland, Ont	May 16	May 30	8 feet.	3,058	1,124 29	36 75
Fassett, Que	June 1	June 6	9 "	1,764	449 62	25 48
Como, Que	June 12	June 13	4 "	239	149 87	62 70
Rigaud, Que	July 17	July 21		5,189	2,622 79	50 54
Vaudreuil, Que	July 24	August 1	8 "	2,112	674 43	31 93
Isle Perrot, Que	Aug. 9	Sept. 13	8 "	3,147	2,697 73	85 72
Woodland, Que	Sept. 16	Oct. 20	8 "	6,976	2,622 79	37 59
Chateauguay, Que	Oct. 25	Nov. 14	8 "	2,069	1,573 67	76 01
Totals				24,534	11,915 19	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	1,160 50	1,091 61	570 00	553 32	671 09	597 00	506 45	477 50	245 00	1,118 25	6,992 70
Fuel	7 00	580 50	394 66	309 13		243 51	374 59	33 00			1,942 39
Provisions	7 50	207 65	189 50	238 79	210 37	217 44	178 45	183 39			1,433 09
Stores and Equipment	714 06	42 12	10 05	15 50	4 00	10 39		3 60		9 52	209 24
Repairs	408 03	309 58		56 52		11 91	4 50	207 65	35 25	220 75	1,254 19
Contingencies	13 94		6 10	16 64		8 75	8 25	29 90			83 58
	1,711 03	2,231 46	1,170 31	1,191 90	885 46	1,089 00	1,072 24	935 04	280 25	1,348 50	11,915 19

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued*

DREDGE 'DESCHENES'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Aylmer, Que	May 9 / July 24	May 27 / Nov. 14	9 feet.	13,603	7,289 07	53 73
Britannia, Ont	May 29	July 21	7 "	7,993	2,959 42	37 15
Totals				21,596	10,248 49	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	787 74	630 81	501 65	485 80	495 00	646 93	464 52	653 25	263 55	780 00	5,709 25
Fuel		310 79	6 00				238 82	617 99		59 53	1,233 13
Provisions	60 00	154 55	165 00	162 58	168 74	165 17	155 83	156 80			1,188 17
Stores and Equipment	97 09	24 05	2 95	48 55		34 50	50 26	21 71		4 30	283 41
Repairs	268 45	228 10	140 10		36 36	289 89		93 50	53 75	598 80	1,708 90
Contingencies	7 75		4 50	9 15	4 95	43 35		2 50	50 00	3 43	125 63
	1,221 03	1,348 30	820 20	706 08	705 05	1,197 84	908 93	1,545 75	367 25	1,446 06	10,248 49

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'INTERNATIONAL'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	$ cts.
Quebec, Que	May 18	July 15		53,064	7,638 15	14 39
" "	July 20	" 25				
Levis, Que	" 17	" 20		10,000	3,054 99	30 54
" "	" 20	Aug. 15				
Montreal, Que	August 21	Nov. 30		99,300	11,986 02	12 07
Totals				162,364	22,679 16	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February, and March.	Totals.
	$ cts	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	824 36	1,198 22	870 00	869 19	720 57	636 67	649 19	628 84	412 12	799 92	7,609 08
Fuel			126 22	8 00	7 35	9 06				2,149 06	2,299 69
Provisions	225 00	417 04	276 17	274 51	233 89	206 50	208 23	199 50	121 28	165 90	2,328 02
Stores and Equipment	24 71	31 10			9 98	54 67	15 00	20 22	35 50	438 20	629 38
Repairs	223 12	1,586 74	3,862 14	205 80	256 61	151 62	999 87			225 19	7,511 09
Pilotage and Towage				25 00				3 00		98 00	126 00
Contingencies	6 25	611 90	6 13	275 00	17 20	21 90		1,195 34	10 95	31 23	2,175 90
Totals	1,303 44	3,845 00	5,140 66	1,657 50	1,245 60	1,080 42	1,872 29	2,046 90	579 85	3,907 50	22,679 16

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'INDUSTRY'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	$ cts.
Meaford, Ont.	April 26	June 28	22 feet.	99,919	11,547 17	11 55
Collin's Inlet, Ont.	July 10	Sept. 20	16 "	99,979	13,160 93	13 16
Byng Inlet, Ont.	October 3	Nov. 11	20 "	57,912	7,216 36	12 46
Totals.				257,812	31,934 46	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages.	1,357 13	1,271 28	1,277 39	1,339 26	1,249 03	1,219 16	1,248 71	1,250 87	399 69	2,044 40	12,656 92
Fuel.	737 05	839 78	.....	1,115 20	.....	1,681 00	16 75	15 49	750 00	816 56	5,971 83
Provisions.	385 83	379 83	382 44	380 50	380 20	357 50	370 16	371 30	58 07	184 50	3,250 33
Stores and Equipment.	161 52	80 00	16 70	.....	93 36	230 76	1,221 98	.....	.....	470 10	2,274 42
Repairs.	875 52	709 46	138 39	66 32	119 42	287 03	266 28	132 86	32 47	3,633 11	6,557 86
Pilotage and Towage	.....	.....	33 00	192 00	9 00	.....	132 00	389 25	.....	.....	755 25
Contingencies	19 45	.....	.....	17 66	.....	85 99	43 66	.....	189 83	111 26	467 85
Totals	3,536 50	3,280 35	1,847 92	3,110 94	1,851 01	3,861 44	3,299 54	2,159 77	1,727 06	7,259 93	31,934 46

ANNUAL REPORT from April 1, 1911 to March 31, 1912.—*Continued.*

DREDGE 'LAKE ST. JOHN'; OWNER DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date.		Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
	From.	To.				
St. John, St. Felicien, Que	June 12	Nov. 10		16,793	$ cts. 9,295 09	$ cts. 53 34

DETAILS OF EXPENDITURE.

—	April	May	June	July	August	September	October	November	December	January February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	490 58	529 50	555 25	514 00	500 50	499 00	514 90	356 84	31 25	107 25	4,099 07
Fuel	381 50	3 45								2,078 70	2,463 65
Provisions	149 50	165 00	165 00	165 00	165 00	165 00	165 00	107 50			1,247 00
Stores and Equipment	305 42	49 56	36 56	13 90	4 43	103 98	16 41	6 65			536 91
Repairs	430 74	154 01	41 55		14 88	95 27	105 25	18 41			860 11
Contingencies	3 76	13 06	3 30	2 94	40 98		5 01		5 60	13 70	88 35
Totals	1,761 50	914 58	801 66	695 84	725 79	863 25	805 57	489 40	36 85	2,199 65	9,295 09

ANNUAL REPORT from April 1, 1911 to March 31, 1912.—*Continued.*

DREDGE 'MATTAWA'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	$ cts.
Lake Nipissing, Ont.	May 16	Aug. 1	11 ft.	44,185	5,845 78	13.23
South River, Ont.	Aug. 4	Sept. 29	13 ft.	32,375	4,270 66	13.11
Sturgeon Falls, Ont.	Oct. 7	Nov. 11	16 ft.	16,050	2,697 26	16.80
				92,610	12,813 70	

DETAILS OF EXPENDITURE.

—	April	May	June	July	August	September	October	November	December	January February and March	Totals
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	558 00	592 58	496 50	521 65	513 21	506 84	681 81	885 43	436 65	773 89	5,966 56
Fuel	53 68	880 13	89 62	17 10	191 09	675 41	356 39	.....	10 00	46 53	2,319 95
Provisions	155 00	199 58	159 00	168 00	168 00	197 50	160 74	157 00	146 70	33 55	1,545 07
Stores and Equipment	163 77	63 54	71 87	.....	.....	51 04	6 90	302 65	.....	5 80	665 57
Repairs	161 10	68 81	52 38	9 35	41 00	25 00	244 03	111 58	43 17	966 49	1,722 91
Contingencies	123 58	27 41	52 91	60 15	60 08	47 00	51 08	23 38	39 20	108 85	595 64
Totals	1,215 13	1,832 05	922 28	776 25	973 38	1,502 79	1,500 95	1,480 04	675 72	1,935 11	12,813 70

ANNUAL Report from April 1, 1911, to March 31, 1912.—*Continued.*

DREDGE 'NIPISSING'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Hawkesbury, Ont.	May 25	June 13	14 Feet	2,661	1,355 98	51·14
Victoria Island, Ont.	June 12.	July 11	14 "	17,559	6,221 59	35·43
	Oct. 16	Nov. 22				
Besserer's Grove	July 12	July 19	10 "	3,042	638 40	20·98
Rockland, Ont.	" 20	" 22	12 "	1,560	239 29	15·33
Rigaud, Que.	" 27	Aug. 5	10 "	546	797 64	145·95
Port Lewis, Que.	Aug. 15	Sept. 6.	12 "	3,756	1,834 57	148·84
Valleyfield, Que.	Sept 12	" 15.	12 "	1,458	319 05	21·19
Charlemagne, Que.	" 23.	Oct. 2	14 "	4,836	797 64	16·49
Hull, Que.	Oct. 16		12 "	1,872	319 05	17·04
				37,280	12,523 21	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	802 15	800 63	760 00	524 00	417 09	693 56	514 16	724 69	280 25	1,186 41	6,702 94
Fuel	7 00	435 90	173 69	89 82	193 53	27 72	295 28	139 20	90 16	22 00	1,474 30
Provisions	72 60	186 09	156 40	153 51	139 23	173 80	220 91	183 50			1,286 04
Stores and Equipment	71 63	117 36	2 80		5 10	20 99	30 53			39 90	288 31
Repairs	111 02	505 47	91 85	205 30	2 98	111 15	330 51	60 27	261 69	693 77	2,374 01
Pilotage and Towage		20 00	125 00		20 00	15 00	50 00				230 00
Contingencies	15 25	26 00	11 12	1 62	13 65	2 48	71 29	9 80	10 50	5 90	167 61
Totals	1,079 65	2,091 45	1,320 86	974 25	791 58	1,044 70	1,512 68	1,117 46	642 60	1,947 98	12,523 21

ANNUAL Report from April 1, 1911, to March 31, 1912.—*Continued.*

DREDGE 'No. 1'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date.		Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
	From	To				
					$ cts.	Cts.
St. Louis River, Que.	April 19	Nov. 2		18,601	5,936 67	31·91

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	320 71	647 25	666 75	662 75	687 42	595 75	643 75	246 15		69 00	4,539 48
Fuel			178 20			198 75	39 75				416 70
Stores and Equipment	23 44	47 85	12 60	77 92				26 31			188 02
Repairs	40 53	51 20				17 80		16 81			126 34
Contingencies	131 75	49 50	46 20	155 50	45 00	87 95	60 23	90 00			666 13
Totals	516 43	795 80	903 75	896 07	732 42	900 25	743 75	379 22		69 00	5,936 67

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'No. 2'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
			Ft.		$ cts.	$ cts.
La Sallette, Que	May 22	Aug. 31	10	15,233	6,315 14	41 45
Long Rapids, Que	Sept. 4	Nov. 15	9	5,225	4,519 50	86 48
				20,458 Also 229 large boulders.	10,834 64	

DETAILS OF EXPENDITURE.

——	April.	May.	June.	July.	August.	September.	October.	November.	December.	January February and March.	Totals.
	$ cts.	$ cts.	8 cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	493 83	495 00	524 89	508 76	967 34	738 00	483 71	497 17	364 71	730 90	5,804 31
Fuel	.....	384 78	.....	145 74	.....	149 24	190 97	.....	757 06	46 00	1,673 79
Provisions	170 50	168 00	168 00	169 45	156 14	174 00	163 16	155 00	59 25	107 90	1,491 40
Stores and Equipment	24 50	92 21	51 52	54 25	4 50	2 03	55 44	.....	24 16	2 50	311 11
Repairs	359 00	33 84	41 00	166 08	71 91	57 46	44 00	84 77	8 56	277 31	1,143 93
Pilotage and Towage	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contingencies	13 40	8 97	29 98	6 20	.....	205 85	14 00	.....	99,28	32 47	410 10
Totals	1,061 23	1,182 80	815 34	1,050 48	1,199 89	1,326 58	951 28	736 94	1,313 02	1,197 08	10,834 64

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'No. 3'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
			Ft.		$ cts.	$ cts.
Yamachiche, Que	May 22		7	13,632	3,710 73	27 22
St. Barthélemi, Que	July 24	July 28	7			
" "	Aug. 16	Aug. 19	6-½	3,220	575 80	17 88
River du Loup, Que	July 29	Aug. 12	6	1,466	959 67	65 46
Bécancour, Que	Aug. 24	Sept. 11	8	4,000	1,215 58	30 38
Louisville, Que	Sept. 16	Nov. 6	6	8,171	3,327 28	40 72
				30,489	9,789 06	

DETAILS OF EXPENDITURE.

——	April.	May.	June	July.	August.	September.	October.	November.	December.	January February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	606 18	450 81	460 67	451 94	476 77	745 00	470 00	652 91	235 00	783 46	5,332 74
Fuel		172 92	317 41	190 00	231 75		323 82	42 02			1,277 92
Provisions	68 50	157 51	149 17	160 56	155 76	172 50	153 00	147 13	20 00	60 00	1,244 13
Stores and Equipment	42 87	38 38		58 90			10 38	8 10		25 06	183 69
Repairs	81 35	130 05	216 16	147 29			98 87	22 19	297 40	354 89	1,348 20
Pilotage and Towage		15 00		95 00		70 00	7 60	24 18	14 00		225 78
Contingencies	30 46	14 85	16 28	15 80	4 32	38 32	1 95	36 32	18 30		176 60
Totals	829 36	979 52	1,159 69	1,119 49	868 60	1,025 82	1,065 62	932 85	584 70	1,223 41	9,789 06

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'No. 5'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Hamilton, Ont.	June 19.	Nov. 11.	16 feet.	46,628	16,857 30	36·10

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	656 67	941 92	765 00	1,120 00	532 42	520 00	507 59	520 00	247 11	765 83	6,576 54
Fuel	35 32	475 82	400 89	310 13	7 00	729 21	147 59	10 50	108 90	45 50	2,265 86
Provision	112 36	164 10	241 91	171 75	168 00	168 00	168 51	168 00	76 14	116 22	1,554 99
Stores and Equipment	59 79	316 00	58 14	72 45	7 12	19 05	127 37	.....	10 86	43 90	714 68
Repairs	422 52	1,760 05	172 76	1,182 25	377 90	30 24	472 81	96 66	32 50	962 40	5,510 09
Pilotage and Towage	.....	66 00	.....	.....	.....	.....	.....	.....	.....	.....	66 00
Contingeneies	14 61	9 57	.....	43 17	.....	.....	3 15	42 80	48 91	6 93	169 14
Totals	1,301 27	3,733 46	1,638 70	2,899 75	1,092 44	1,466 50	1,427 02	837 96	524 42	1,935 78	16,857 30

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'No. 6'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	$ cts.
Charlemagne, Que	Aug. 16.	Aug. 17.		55	255 80	4 65·10
River des Prairies, Que	" 28.	Nov. 11.		8,263	9,720 80	1 17·64
Totals				8,318	9,976 60	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages					786 62	592 01	524 93	529 17	377 04	1,975 78	4,785 55
Fuel				462 40		176 84	289 05	33 00	42 02		1,003 31
Provision				7 00	203 69	161 61	180 24	155 00		133 03	840 57
Stores and Equipment					5 95	39 15	139 01			83 44	267 55
Repairs				18 05	125 49	231 46	251 64	14 59	300 37	1,845 95	787 55
Pilotage and Towage				25 25							25 25
Contingencies				9 50	10 75	39 04	84 15	59 55	49 55	14 28	266 82
Totals				522 20	1,132 51	1,240 11	1,469 02	791 31	768 98	4,052 48	9,976 60

Annual Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'ONTARIO;' OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Chenal Ecarts, Ont	April 28	Nov. 24	3 to 20 feet.	57,100	11,267 57	19·73

DETAILS OF EXPENDITURE.

——	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	471 33	451 71	530 00	530 00	652 34	637 34	638 83	703 10	202 45	377 74	5,194 87
Fuel	129 76	144 00	184 90	.....	228 00	213 60	203 80	141 40	.....	8 21	1,253 67
Provisions	108 75	142 14	168 00	166 08	166 79	169 50	168 00	162 50	53 82	40 00	1,345 58
Stores and Equipment	136 33	131 50	213 53	2 05	9 96	28 44	55 60	.....	4 25	118 68	700 34
Repairs	38 27	886 83	45 25	5 45	77 34	14 10	20 95	231 11	52 80	634 83	2,000 93
Pilotage and Towage	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contingencies	9 15	10 60	.....	.....	10 60	180 75	224 75	244 50	80 87	4 96	766 18
Totals	893 59	1,766 78	1,141 68	703 58	1,145 03	1,243 73	1,311 93	1,482 61	394 22	1,184 42	11,267 57

Annual Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'OTTAWA;' OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	$ cts.
Les Eboulements, Que	May 21	July 19	15 feet.	15,951	7,380 76	46·27
Baie St. Paul, Que	July 22	Oct. 10	15 "	9,689	9,800 67	1 01·15
Batiscan, Que	Oct. 19	Nov. 17	15 "	30,876	3,630 47	11·75
Totals				56,516	20,811 90	

DETAILS OF EXPENDITURE.

——	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	1,008 00	1,009 20	1,042 74	949 59	885 00	890 00	890 00	890 00	458 67	1,382 68	9,405 88
Fuel										2,013 21	2,013 21
Provisions	345 00	334 32	357 50	309 19	285 00	285 00	285 00	286 40	83 22	91 62	2,662 25
Stores and Equipment		116 05	234 91	23 15	47 25	78 30		28 61		341 29	869 56
Repairs	302 24	736 76	60 87	810 15	735 00	55 47	395 11	1,070 12		288 89	4,454 61
Pilotage and Towage			20 00					20 00		10 00	50 00
Contingencies	39 63		18 26	22 00	31 00	197 74	3 00	201 45	62 55	780 76	1,356 39
Totals	1,694 87	2,196 33	1,734 28	2,114 28	1,983 25	1,506 51	1,573 11	2,496 58	604 44	4,908 45	20,811 90

ANNUAL REPORT from April 1, 1911 to March 31, 1912—*Continued.*

DREDGE 'PROGRESS'; OWNER DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards. Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	$ cts.
Quebec, Que	May 1	May 22		9,076	4,595 49	50·63
Rimouski, Que	June 8	June 22	15 feet.	26,196		
" "	Sept. 18	Oct. 4	15 "	26,196	66,684 37	25·51
Matane, Que	July 3	Sept. 9	7 "	46,152	14,413 13	31·22
Batiscan, Que	Oct. 23	Oct. 26	12 "	9,245	835 54	09·03
Longueuil, Que	Nov. 3	Nov. 22	10 "	10,312	4,178 25	40·51
				100,981	30,706 78	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	1,110 00	1,377 34	1,313 00	1,501 88	1,478 57	1,262 75	1,334 91	1,255 83	515 65	1,065 52	12,215 40
Fuel	.....	19 52	.....	879 80	17 00	.....	.....	411 92	771 36	1,224 25	3,323 85
Provisions	372 50	165 00	418 00	483 58	453 71	413 46	437 08	423 82	161 25	342 58	3,670 99
Stores and Equipment	267 96	412 85	69 20	32 08	147 70	463 47	260 90	58 91	62 74	242 01	2,017 82
Repairs	451 46	1,996 74	.....	1,310 35	24 50	5 00	.....	1,990 27	275 58	2,009 11	8,063 01
Pilotage and Towage	.....	10 00	.....	.....	.....	.....	.....	.....	.....	.....	65 00
Contingencies	13 03	34 80	161 00	13 39	127 33	172 10	18 80	277 00	39 66	493 60	1,350 71
Total	2,214 90	4,016 25	1,961 20	4,221 08	2,248 81	2,316 73	2,051 69	4,417 75	1,881 25	5,377 07	30,706 78

ANNUAL REPORT from April 1, 1911 to March 31, 1912—*Continued.*

DREDGE 'QUEEN'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	$ cts.
Ville Marie, Que	May 23	July 15	10 feet.			
" "	Aug. 15	Sept 13		12,727	6,574 46	51·65
Temiskaming, Que	" 10	Only		18	78 26	4 34·77
McMartin's Point, Que	Sept. 20	Oct. 13		477	1,878 38	3 93·79
Haileybury, Que	Oct. 24	Nov. 16	10 feet.	2,106	1,878 38	89·19
				15,328	10,409 48	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January February and March.	Totals.
	$ cts	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	856 96	728 98	535 00	535 00	826 62	792 50	593 55	500 00	150 00	400 65	5,919 26
Fuel			340 30		26 00	20 00	88 60				474 90
Provisions	236 50	218 26	188 10	198 36	191 06	180 60	160 69	173 10	55 00	60 00	1,661 67
Stores and Equipment	145 22	92 60		14 84	32 60	55 79	7 05			24 00	372 10
Repairs	214 75	51 25	65 04	63 13	108 31	355 97	8 50	32 70	22 00	388 33	1,310 00
Pilotage and Towage			96 00			161 00					257 00
Contingencies	38 47	56 27	108 73	16 21	32 64	18 91	13 00	74 27	27 54	28 52	414 55
Totals	1,491 90	1,147 36	1,333 17	827 55	1,217 23	1,584 77	871 39	780 07	254 54	901 50	10,409 48

ANNUAL Report from April 1, 1911, to March 31, 1912.—*Continued.*

DREDGE 'QUEBEC'; OWNER, DÉPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Port Burwell, Ont	April 1	May 20	27 ft			
"	Aug. 9	Sept. 7	25 ft			
"	Oct. 5	Dec. 28	21 ft	186,300	19,360 37	
Port Stanley, Ont	May 23	Aug. 4				
"	Sept. 13	Sept. 30		115,180	10,794 36	
				301,480	30,154 73	

DETAILS OF EXPENDITURE.

——	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	1,306 43	1,366 76	1,250 00	1,272 00	1,312 60	1,235 67	1,244 35	1,251 00	1,438 72	2,348 76	14,026 29
Fuel	187 94	754 98	411 70	1,142 10	183 60	285 84	156 00	409 50	464 01	1,075 99	5,071 66
Provisions	382 50	390 69	391 19	365 00	390 00	383 50	387 58	399 00	224 03	298 01	3,621 50
Stores and Equipment	1 99		462 25	61 74	327 65	244 91	10 29	52 69		1,607 00	2,768 52
Repairs	59 45	148 55	426 66	147 43	90 10	364 23	30 15	74 45	6 45	2,778 37	4,135 84
Pilotage and Towage		6 00	45 00							51 00	51 00
Contingencies	9 73	74 40	34 95	28 12	59 71	22 23		33 73	18 97	198 08	479 92
Totals	1,948 04	2,741 38	3,021 75	3,026 39	2,363 66	2,546 38	1,828 37	2,220 37	2,152 18	8,306 21	30,154 73

ANNUAL Report from April 1, 1911, to March 1912—*Continued.*

DREDGE 'RICHELIEU'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date.		Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
	From	To				
					$ cts.	Cts.
St. Johns, Que	May 16	Sept. 2		20,567	9,309 66	45·26.
Lacolle, Que	Sept. 5	Nov. 14		14,817	3,385 24	22 84.
				35,384	12,694 90	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages			152 97						5,558 59	365 00	6,076 56
Fuel											
Provisions			184 80								184 80
Stores and Equipment, etc.		21 10	84 65						4,378 52		4,484 27
Repairs		9 20	1,337 90							602 17	1,949 27
Totals		30 30	1,760 32						9,937 11	967 17	12,694 90

ANNUAL Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'ST. MAURICE'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Mackinac, Que	June 28	July 11		5,251	976 71	.18·60
Isle au Morpion, Que	July 13	August 3		7,321	1,534 74	.20·96
Chenal de la Peche, Que	August 4	" 19		5,181	1,116 17	.21·54
" Trudel, Que	" 22	September 28		16,022	2,650 91	.16·54
Pointe Madeline, Que	October 3	October 6		1,294	279 04	.21·56
				35,069	6,557 57	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages			286 45	609 70	363 58	371 35	208 85	361 36	108 00	195 00	2,504 29
Fuel						484 83	103 32			2,103 24	2,691 39
Provisions			18 33	105 50	104 75	103 77	31 70	39 50	14 00		417 55
Stores and Equipment			30 91	45 86		266 62	6 28			22 13	202 77
Repairs				54 48		91 59	9 04			13 20	337 34
Pilotage and Towage			33 25	127 75							161 00
Contingencies			12 18			15 00	195 00	13 15		7 90	243 23
Totals			381 12	943 29	468 33	1,333 16	554 19	414 01	122 00	2,341 47	6,557 57

Annual Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'ST. LOUIS.'

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Isle Gros Bois, Que	May 5	June 28	9 feet	20,010	4,851 83	24·24
King Edward Park	August 10	September 7				
Vaudreuil, Que	July 8	July 20	5 feet	5,065	750 85	14·82
Como, Que	July 22	August 5	5 feet	3,732	866 37	23·21
Contrecœur, Que	September 9	October 21	8 feet	7,867	2,483 59	31·56
Dorval, Que	October 31	November 14	8 feet	1,725	924 13	53·57
				35,399	9,876 76	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	336 66	440 00	440 00	440 00	565 00	445 00	717 42	445 00	199 95	539 81	4,568 84
Fuel	263 10	4 59	213 64	130 78	123 71	.....	281 08	178 86	.....	.....	1,195 76
Provisions	110 00	153 00	153 00	158 81	154 20	153 00	160 05	154 36	.....	15 48	1,211 90
Stores and Equipment	224 04	.....	.....	.....	10 45	.....	60 10	.....	.....	4 76	299 35
Repairs	795 23	73 81	53 70	356 43	49 64	269 95	71 41	32 78	162 35	384 79	2,250 09
Pilotage and Towage	30 00	.....	15 00	.....	20 00	.....	.....	.....	.....	.....	65 00
Contingencies	39 60	4 40	55 66	73 08	6 73	26 71	17 10	40 68	.....	21 86	285 82
Totals	1,798 63	675 80	931 00	1,159 10	929 73	894 66	1,307 16	851 68	362 30	966 70	9,876 76

Annual Report from April 1, 1911, to March 31, 1912—*Continued.*

DREDGE 'SIR RICHARD'; OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Hamilton, Ont	April 20	June 29				
"	July 17	July 20	16 feet			
"	August 30	September 29				
"	November 14	November 23	16 feet	41,775	7,625 37	18·25
Burlington Pier, Ont	July 3	July 14	16 feet	3,870	788 83	20·38
" Bay, Ont	October 3	November 10	14 feet	14,355	2,563 70	17·16
Bronte, Ont	July 22	August 4	16 feet	7,290	920 30	12·62
Oakville, Ont	August 7	August 29	16 feet	11,340	1,512 71	13·33
				78,630	13,410 91	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	685 38	485 75	676 83	1,320 00	520 00	520 00	520 00	507 70	478 92	625 00	6,339 58
Fuel	334 61	200 30	172 94	187 28	267 50	194 31	330 52	65 86	144 26	125 04	2,022 56
Provisions	154 44	151 43	164 50	168 00	168 00	168 00	168 00	160 50	132 71	56 00	1,491 58
Stores and Equipment	36 23	8 00	53 74	221 12	17 19		31 67	8 36	2 00	187 10	565 41
Repairs	456 00	61 50	35 42	517 14	729 36	32 75		93 68	238 11	667 79	2,831 75
Contingencies	9 90	13 05	75	15 80	35 84		1 15	3 45	65 93	14 16	160 03
Totals	1,676 56	920 03	1,104 18	2,429 34	1,737 89	915 06	1,051 34	839 55	1,061 87	1,675 09	13,410 91

QUEBEC.

Contract Dredging.

DREDGING SEASON 1911.

Dredging done at River du Loup (en haut), Que.
Under contract with W. J. Poupore Co.
Names of dredges, *Prince Willie, Pontiac* and *Duke of York.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	84,362 cubic yards.	20c.	Scow.
Total	84,362 cubic yards.		

Amount paid contractor	$16,934 32
" for inspection	602 35
Total expenditure	$17,536 67

Work commenced, May 4.
Work completed, August 12.
Depth of water made below zero, 5 and 7 feet.
(NOTE.—Extra haul, 6,192 cubic yards, 4 miles.)

DREDGING SEASON 1911.

Dredging done at River Bastican, Que.
Under contract with W. J. Poupore Co.
Name of dredge, *Prince Willie.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	35,739·25 cubic yards.	15c.	Scow.
Total	35,739·25 cubic yards.		

Amount paid contractor	$5,360 89
" for inspection	237 00
Total expenditure	$5,597 80

Work commenced, August 16.
Work completed, November 14.
Depth of water made below zero, 7 feet.

DREDGING SEASON 1911.

Dredging done at St. François du Lac, Que.
Under contract with Cie Industrielle de Sorel.
Name of dredge, *No. 6.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	2½ cu. yd. boulders.	at $1.65	
Class B			
Class C	117,140½ cubic yards.	17½c.	Scow.
Total	117,140½ cubic yards.		

Amount paid contractor	$20,455 18
" for inspection	544 94
Total expenditure	$21,000 12

Work commenced, May 6.
Work completed, November 16.
Depth of water made below zero, 8 and 10 feet.
(NOTE.—Extra haul, 379 cubic yards, 4 miles.)

DREDGING SEASON 1911.

Dredging done at St. Maurice, River, Que.
Under contract with Antoine St. Pierre.
Name of dredge, *St. Pierre.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	161,120 cubic yards.	14c.	Scow.
Total	161,120 cubic yards.		

Amount paid contractor	$22,256 80
" for inspection	531 07
Total expenditure	$23,087 87

Work commenced, May 9.
Work completed, November 18.
Depth of water made below zero, 6, 8 and 10 feet.

DREDGING SEASON 1911.

Dredging done at Montmagny, Que.
Under contract with L. Cohen Sons.
Name of dredge, *Nehoc*.

	Quantity removed.	Price per Cubic Yard.	Method of Measurement.
Class A.....	.....	.....	.....
Class B.....	.....	.....	.....
Class C.....	19,991 cubic yards.	32½c.	Scow.
Total.....	19,991 cubic yards.	.....	.....

Amount paid contractor.....	$	6,497 08
" for inspection.....		95 00
Total expenditure.....	$	6,592 08

Work commenced, May 17.
Work completed, June 20.
Depth of water made below zero, 0.

DREDGING SEASON 1911.

Dredging done at River St. Francis, Que.
Under contract to Bastien, Laurin & Leitch.
Names of dredges, *Nehoc* and *Lanark*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.....	.....	.....	.....
Class B.....	.....	.....	.....
Class C.....	59,563 cubic yards.	16c.	Scow.
Total.....	59,563 cubic yards.	.....	.....

Amount paid contractor.....	$	9,530 08
" for inspection.....		219 43
Total expenditure.....	$	9,749 51

Work commenced, September 19.
Work completed, November 16.
Depth of water made below zero, 8 feet.

DREDGING SEASON 1911.

Dredging done at Saguenay River, Que.
Under contract with Continental Dredging Co.
Name of dredge, *Algonquin*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	165¾ cubic yards.	$2.50.	Scow.
Class B	.....	.....	.....
Class C	184,022 cubic yards.	32½c.	Scow.
Total	184,187¾ cubic yards.	.....	.....

Amount paid contractor	$	60,292 41
" for inspection		1,072 50
Total expenditure	$	61,364 91

Work commenced, May 25.
Work completed, November 10.
Depth of water made below zero, 18 feet.

DREDGING SEASON 1911.

Dredging done at Verdun, Que.
Under contract with Laurin & Leitch.
Name of dredge, *No. 4*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	.....	.....	.....
Class B	.....	.....	.....
Class C	11,212 cubic yards.	41c.	Scow.
Total	11,212 cubic yards.	.....	.....

Amount paid contractor	$	4,596 92
" for inspection		136 45
Total expenditure	$	4,733 37

Work commenced, May 25.
Work completed, July 15.
Depth of water made below zero, 8 feet.

DREDGING SEASON 1911.

Dredging done at Berthierville, Que.
Under contract with W. J. Poupore Co.
Names of dredges, *Duke of York* and *Prince Guy.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	74,495 cubic yards	14c.	Scow.
Total	74,495 cubic yards		

Amount paid contractor	$11,005 43
" " for inspection	392 22
Total expenditure	$11,397 65

Work commenced, August 18.
Work completed, November 22.
Depth of water made below zero, 11 feet.
NOTE.—Extra hauling { 38,116 cubic yards, 4 and 4½ miles. / 7,780 cubic yards, 5 miles.

DREDGING SEASON 1911.

Dredging done at East Templeton (Green Shoals), Que.
Under contract with L. Cohen & Son.
Name of dredge, *Mogul.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	17,646·8 cubic yards	$3.75.	Scow.
Class B			
Class C			
Total	17,646·8 cubic yards		

Amount paid contractor	$66,175 52
" " for inspection	632 10
Total expenditure	$66,807 62

Work commenced, July 3.
Work completed, November 16.
Depth of water made below zero, 9·5 feet.

NOTE.—$4,000 was deducted from the above for dredging below grade, to be held pending survey.

DREDGING SEASON 1911.

Dredging done at Quebec Harbour.
Under contract with H. Dussault.
Names of dredges, *Stephen D.* and *Brucelles.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	770,935 cubic yards	9c.	Scow.
Total	770,935 cubic yards		

Amount paid contractor	$69,384 15
" " for inspection	562 50
Total expenditure	$69,946 65

Work commenced, June 1.
Work completed, November 25.
Depth of water made below zero, 15, 18 and 19 feet.

DREDGING SEASON 1911.

Dredging done at Quebec, Que.
Under contract with Dominion Dredging Co.
Name of dredge, *Fundy.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	36¾ cubic yards	$2.25.	Scow.
Class B			
Class C	318,532½ cubic yards	20c.	Scow.
Total	318,569¼ cubic yards		

Amount paid contractor	$63,789 20
" " for inspection	432 75
Total expenditure	$64,221 95

Work commenced, June 22.
Work completed, November 25.
Depth of water made below zero, 35 feet.

DREDGING SEASON 1911.

Dredging done at Bonaventure River, Que.
Under contract with Frs. Lemoine.
Name of dredge, *Francis Lemoine.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	68,067·5 cubic yards.	24½c.	Scow.
Total	68,067·5 cubic yards.		

Amount paid contractor	$	16,302 67
" for inspection		332 50
Total expenditure	$	16,635 17

Work commenced, May 20.
Work completed, November 4.
Depth of water made below zero, 9 feet.
NOTE.—4,578 cubic yards of above was cast-over.

DREDGING SEASON 1911.

Dredging done at Isle Perrot, Que.
Under contract with L. Cohen & Son.
Name of dredge, *Mogul.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	1,110 cubic yards.	$ 4.50	Scow.
Class B			
Class C			
Total	1,110 cubic yards.		

Amount paid contractors	$	4,995 00
" for inspection		73 00
Total expenditure	$	5,068 00

Work commenced, May 18.
Work completed, June 9.
Depth of water made below zero, 10 feet.

DREDGING SEASON 1911.

Dredging done at Nicolet, Que.
Under contract with L. Cohen & Son.
Names of dredges, *Central City, Little Giant, Lanark* and *Maberly.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	112,784 cubic yards.	30¼c.	Place.
Total	112,784 cubic yards.		

Amount paid contractor	$	34,514 89
" for inspection		713 58
Total expenditure	$	35,228 47

Work commenced, May 9.
Work completed, August 13.
Depth of water made below zero, 10 feet.

DREDGING SEASON 1911.

Dredging done at Nicolet, Que. (Old Channel, Mouth of River).
Under contract with L. Cohen & Son.
Name of dredge, *Little Giant.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	23,774 cubic yards.	20c.	Scow.
Total	23,774 eubic yards.		

Amount paid contractor	$	4,754 80
" for inspection		94 00
Total expenditure	$	4,848 80

Work commenced, August 14.
Work completed, September 19.
Depth of water made below zero, 10 feet.

DREDGING SEASON 1911.

Dredging done at St. Peter's Channel, Que., Verchères, St. Lawrence River.
Under contract with L. Cohen & Son.
Name of dredge, *Lanark*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.....	.....		
Class B.....	.....		
Class C.....	4,908	25c.	Scow.
Total.....	4,908 cubic yards.		

Amount paid contractor.....	$1,227 00
" " for inspection	60 00
Total expenditure.....	$1,287 00

Work commenced, September 4.
Work completed, September 25.
Depth of water made below zero, 8 feet.

DREDGING SEASON 1911.

Dredging done at Racine Wharf, Que., Locomotive Works.
Under contract with L. Cohen & Son.
Name of dredge, *Mayberly*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A..	....		
Class B.....	.....		
Class C..... ..	21,350	21c.	Scow.
Total.....	21,350 cubic yards.		

Amount paid contractor.....	$4,483 50
" " for inspection.....	151 50
Total expenditure.....	$4,635 00

Work commenced, August 22.
Work completed, October 25.
Depth of water made below zero, 12 feet.

DREDGING SEASON 1911.

Dredging done at Doucet's Landing, Que.
Under contract with Dufresne & Marchildon.
Name of dredge, *Capital.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.			
Class B.			
Class C	14,740	25c.	Scow.
Total	14,740 cubic yards.		

Amount paid contractor	$3,676 00
" " for inspection	105 00
Total expenditure	$ 3,781 00

Work commenced, September 15.
Work completed, October 25.
Depth of water made below zero, 11 feet.

DREDGING SEASON 1911.

Dredging done at River Godfroy, Que.
Under contract with Dufresne & Marchildon.
Name of dredge, *Capital.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.			
Class B		22c.	Scow.
Class C.	7,062		
Total	7,062 cubic yards.		

Amount paid contractor	$1,553 64
" " for inspection	54 00
Total expenditure	$1,607 64

Work commenced, August 14.
Work completed, September 2.
Depth of water made below zero, 6½ feet.

ONTARIO.

Contract Dredging.

DREDGING SEASON 1911.

Dredging done at Toronto, Ont., National Iron Works.
Under contract with John E. Russell.
Names of dredges, *Dragon Rouge* and *Islander*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	None.		
Class C	(Cast over 14,647 cu. yds.)	14c.	Place.
	14,747 cubic yards.	20c.	Scow.
Total	29,394 cubic yards.		

Amount paid contractor	$	4,999 98
" for inspection		
Total expenditure		

Work commenced, March 31.
Work completed, May 25.
Depth of water made below zero, 16 feet.

DREDGING SEASON 1911.

Dredging done at Toronto, Ont., Eastern Entrance.
Under contract with R. Weddell & Co.
Name of dredge, *IXL*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	None.		
Class B	None.		
Class C	20,000 cubic yards.	16c.	Scow.
Total	20,000 cubic yards.		

Amount paid contractor	$	3,200 00
" for inspection		
Total expenditure		

Work commenced, April 25.
Work completed, May 13.
Depth of water made below zero, 20 feet.

DREDGING SEASON 1911.

Dredging done at Toronto, Ont., Ashbridge's Bay.
Under contract with R. Weddell & Co.
Name of dredge, *IXL.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	None.		
Class B	None.		
Class C	140,720 cubic yards.	12c.	Scow.
Total	140,720 cubic yards.		

Amount paid contractor	$	16,886 40
" for inspection		
Total expenditure		

Work commenced, May 29.
Work completed, September 6.
Depth of water made below zero, 16 feet.

DREDGING SEASON 1911.

Dredging done at Victoria Harbour, Ont.
Under contract with Canadian Dredging and Construction Co.
Names of dredges, *Excelsior, Monarch, Sydenham* and *Leland.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	46,681 cubic yards.	$2.25	Scow.
Class B			
Class C	595,214·5 cubic yards.	12½c.	Scow.
Total	641,895·5 cubic yards.		

Amount paid contractor	$	179,434 11
" for inspection		1,611 39
Total expenditure	$	181,045 50

Work commenced, May 1.
Work completed, December 19.
Depth of water made below zero, 25 feet.

DREDGING SEASON 1911.

Dredging done at Tiffin, Ont.
Under contract with Canadian Dredging and Construction Co.
Names of dredges, *Excelsior, Monarch, Sydenham* and *Leland.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.	48,964·5 cubic yards.	$2.25.	Scow.
Class B.			
Class C.	39,870 cubic yards.	29c.	Scow.
Total	88,834·5 cubic yards.		

Amount paid contractor	$	121,732 40
" " for inspection		550 86
Total expenditure		122,283 26

Work commenced, June 2.
Work completed, November 1.
Depth of water made below zero, 25 feet.

NOTE.—A deduction was made from above of $10,644.74 for dredging below grade in 1910.

DREDGING SEASON 1911.

Dredging done at Waubaushene, Ont. (Fesserton to Coldwater).
Under contract with Penetang. Dredging Co.
Names of dredges, *Excelsior, Leland* and *Hackett.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.	1,790 cubic yards.	$3.00	Scow.
Class C.	(Cast over 88,052·8 cu.yd.)	14c.	Scow.
	92,887·8 cubic yards.	15c.	Scow.
Total	94,677·8 cubic yards.		

Amount paid contractor	$	18,485 79
" " for inspection		62 00
Total expenditure	$	18,547 79

Work commenced, May 1.
Work completed, November 15.
Depth of water made below zero, 10 and 14 feet.

NOTE.—Extra haul { 1,560 hauled, 6 miles, 3 cents.
1,685 hauled, 4½ miles, 1 cent.

DREDGING SEASON 1911.

Dredging done at Fort William, Ont.
Under contract with Great Lakes Dredging Co.
Names of dredges, *No. 15, Dominion, No. 1, No. 6, Shuniah, Frank, Imperial, Province* and *No. 8.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.	37,784 cubic yards.	9 to 27½c	Scow.
Class B.			
Class C.	3,966,960 cubic yards.		(Place for suction dredge.)
Total	4,004,744 cubic yards.		

Amount paid contractor	$	744,938 94
" " for inspection		5,118 00
Total expenditure	$	750.056 94

Work commenced, April 27.
Work completed, December 4.
Depth of water made below zero, 25 feet.
Dry dock and revetment wall, 17 feet.

DREDGING SEASON 1911.

Dredging done at Port Arthur, Ont., channel to dry dock.
Under contract with Great Lakes Dredging Co.
Name of dredges, *No. 15* and *No. 1.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A.	43½ cubic yards.		Scow.
Class C.	(Cast over 313 cu. yds.)		Scow.
	40,865 cubic yards.		Scow.
Total	40,908½ cubic yards.		

Amount paid contractor	$	4,929 38
" " for inspection, included with Fort William.		

Work commenced, June 5.
Work completed, November 21.
Depth of water made below zero, 17 feet.

DREDGING SEASON 1911.

Dredging done at Telegraph and Nigger Island, Ont.
Under contract with R. Weddell & Co.
Name of dredge, *IXL.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	3,315 cubic yards.	$3.00	Scow.
Class B			
Class C			
Total	3,315 cubic yards.		

Amount paid contractor	$	9,945 00
" " for inspection		28 39
Total expenditure	$	9,973 39

Work commenced, July 15.
Work completed, July 20.
Depth of water made below zero, 14 feet.

DREDGING SEASON 1911.

Dredging done at Salt Point, Ont.
Under contract with R. Weddell & Co.
Name of dredge, *IXL.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	11,880 cubic yards.	28c.	Place.
Total	11,880 cubic yards.		

Amount paid contractor	$	3,326 40
" " for inspection		30 00
Total expenditure	$	3,356 40

Work commenced, July 1.
Work completed, July 12.

DREDGING SEASON 1911.

Dredging done at Goderich, Ont.
Under contract with W. L. Horton.
Name of dredge, *Arnoldi.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	11,634 cubic yards.	$2.75	Scow.
Class B			
Class C	47,799 cubic yards.	25c.	Scow.
Total	59,433 cubic yards.		

Amount paid contractor	$	43,943 75
" " for inspection		528 00
Total expenditure	$	44,471 75

Work commenced, May 3.
Work completed, December 8.
Depth of water made below zero, 17, 19, 20, 21 and 22 feet.

DREDGING SEASON 1911.

Dredging done at Port Arthur, Ont.
Under contract with W. E. Phin.
Name of dredge, *Kennequhair.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	498,549 cubic yards.	13c.	Scow.
Total	498,549 cubic yards.		

Amount paid contractor	$	66,489 48
" " for inspection		700 00
Total expenditure	$	67,189 45

Work commenced, May 2.
Work completed, May 18.
Depth of water made below zero, 22 and 25 feet.

DREDGING SEASON 1911.

Dredging done at Byng Inlet, Ont.
Under contract with Manley & Co.
Name of dredge *St. Lawrence.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	88,912 cubic yards.	9½c.	Scow.
Total	88,912 cubic yards.		

Amount paid contractor	$	8,445 64
" for inspection		123 12
Total expenditure	$	8,568 76

Work commenced, May 8.
Work completed, July 10.
Depth of water made below zero, 20 feet.

DREDGING SEASON 1911.

Dredging done at Midland, Ont.
Under contract with Canadian Dredging and Construction Co.
Name of dredge *Sydenham.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	24,866⅔ cubic yards.	8c.	Scow.
Total	24,866⅔ cubic yards.		

Amount paid contractor	$	1,989 31
" for inspection		64 27
Total expenditure	$	2,053 58

Work commenced, October 30.
Work completed, November 20.
Depth of water made below zero, 25 feet.

DREDGING SEASON 1911.

Dredging done at Port Elgin, Ont.
Under contract with Dredging and Draining Co. of Ontario.
Name of dredge, *Jack Canuck*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	34,682 cubic yards.	17½c.	Scow.
Total	34,682 cubic yards.		

Amount paid contractor	$	6,069 36
" for inspection		180 00
Total expenditure	$	6,249 36

Work commenced, May 22.
Work completed, December 1.
Depth of water made below zero, 14 feet.

DREDGING SEASON 1911.

Dredging done at Kincardine, Ont.
Under contract with Dredging and Draining Co. of Ontario.
Name of dredge, *Jack Canuck*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	39,985·5 cubic yards.	17½c.	Scow.
Total	39,985·5 cubic yards.		

Amount paid contractor	$	6,998 16
" for inspection		234 00
Total expenditure	$	7,232 16

Work commenced, June 6.
Work completed, September 5.
Depth of water made below zero, 14 feet.

DREDGING SEASON 1911.

Dredging done at Saugeen River, Ont. (Southampton).
Under contract with Dredging and Draining Co. of Ontario.
Name of dredge, *Jack Canuck*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	10,000 cubic yards	28c.	Scow.
Total	10,000 cubic yards		

Amount paid contractor	$2,800 00
" " for inspection	62 91
Total expenditure	$2,862 91

Work commenced, September 14.
Work completed, October 6.
Depth of water made below zero, 11 feet.

DREDGING SEASON 1911.

Dredging done at Rainy River, Ont.
Under contract with A. F. Bowman.
Name of dredge, *Moose*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	167,920 cubic yards	37c.	Scow.
Total	167,920 cubic yards		

Amount paid contractor	$62,130 40
" " for inspection	585 70
Total expenditure	$62,716 10

Work commenced, May 16.
Work completed, October 7.
Depth of water made below zero, 10 to 12 feet.

DREDGING SEASON 1911.

Dredging done at Picnic Island, Ont.
Under contract with C. S. Boone Co.
Name of dredge, *No. 14.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A		$1.75.	Scow.
Class B			
Class C	37,460·4 cubic yards		
Total	37,460·4 cubic yards		

Amount paid contractor	$65,555 70
" " for inspection	458 75
Total expenditure	$66,014 45

Work commenced, May 25.
Work completed, October 21.
Depth of water made below zero, 22 feet.

DREDGING SEASON 1911.

Dredging done at Parry Sound, Ont.
Under contract with C. S. Boone Dredging Co.
Name of dredge, *Kingsford.*

	Quantity Removed.	Price per Cubic Yards.	Method of Measurement.
Class A			
Class B			
Class C	1,012 cubic yards.	25c.	Scow.
Total	1,012 cubic yards.		

Amount paid contractor	$ 253 00
" " for inspection	63 91
Total expenditure	$ 316 91

Work commenced, May 22.
Work completed, May 25.
Depth of water made below zero, 14 feet.

DREDGING SEASON 1911.

Dredging done at The Narrows, Ont.
Under contract with C. S. Boone & Co.
Name of dredge, *Kingsford.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	7,670 cubic yards.	$2.74	Scow.
Class B			
Class C	8,291 cubic yards.	49c.	Scow.
Total	15,961 cubic yards.		

Amount paid contractor	$ 23,802 46
" " for inspection	463 59
Total expenditure	$ 24,266 05

Work commenced, June 3.
Work completed, November 16.
Depth of water made below zero, 10 feet.
NOTE.—1,278 cubic yards, class A, cast-over.

DREDGING SEASON 1911.

Dredging done at Penetanguishene, Ont.
Under contract with R. Weddell & Son.
Name of dredge, *Togo.*

	Quantity Removed.	Price per Cubic Yard.	Method of Mesurement.
Class A			
Class B			
Class C	75,086 cubic yards.	12c.	Place.
Total	75,086 cubic yards.		

Amount paid contractor	$ 9,010 32

Work commenced, May 22.

DREDGING SEASON 1911.

Dredging done at Wiarton, Ont.
Under contract with C. S. Boone Co.
Name of dredge, *Meade.*

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	28,798 cubic yards	26c.	Place.
Total	28,798 cubic yards.		

Amount paid contractor	$ 7,357 48

Work commenced, June 21.
Work completed, August 10.
Depth of water made below zero, 18 feet.

DREDGING SEASON 1911.

Dredginfi done at River Thames, Ont.
Under contract with W. E. Phin.
Name of dredge, no reports.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	98,786 cubic yards.	35c.	Place.
Total	98,786 cubic yards.		

Amount paid contractor	$35,170 00
" for inspection	427 97
Total expenditure	$35,597 97

DREDGING SEASON 1911.

Dredging done at Jeanette's Creek, Ont.
Under contract with Chatham Dredging and General Construction Co.
Name of dredge, no reports.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	5,805 cubic yards.	12½c.	Place.
Total	5,805 cubic yards.		

Amount paid contractor	$725 62
" for inspection	30 50
Total expenditure	$756 12

DREDGING SEASON 1911.

Dredging done at Kingsville, Ont.
Under contract with Windsor Dredging Co.
Name of dredge, *Peltier*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	50,000 cubic yards.	29½c.	Scow.
Total	50,000 cubic yards.		

Amount paid contractor	$14,750 00
" for inspection	170 91
Total expenditure	$14,920 91

Work commenced, August 21.
Work completed, November 2.
Depth of water made below zero, 16 feet.

DREDGING SEASON 1911.

Dredging done at Echo Bay, Ont.
Under contract with Robertson, Kennedy & Ferrier.
Name of dredge, *Julia Murphy*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	16,965 cubic yards.	22c.	Place.
Total	16,965 cubic yards.		

Amount paid contractor $2,740 83

Work commenced, August 16.
Work completed, November 2.
Depth of water made below zero, 8 feet.
NOTE.—13,520 cubic yards cast-over at 14⅔ cents.

DREDGING SEASON 1911.

Dredging done at Port Hope, Ont.
Under contract with R. Weddell & Co.
Name of dredge, *Trenton*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A			
Class B			
Class C	31,562·5 cubic yards	24½c.	Scow.
Total	31,562·5 cubic yards	24½c.	

Amount paid contractor	$	7,732 81
" " for inspection		86 90
Total expenditure	$	7,819 71

Work commenced, October 13.
Work completed, December 21.
Depth of water made below zero, 16 feet.

DREDGING SEASON 1911.

Dredging done at Big Island, Ont.
Under contract with R. Weddell & Co.
Name of dredge, *Trenton*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurement.
Class A	14,725 cubic yards	$4.50.	Scow.
Class B			
Class C			
Total	14,725 cubic yards	$4.50.	

Amount paid contractor	$ 21,262 50
" " for inspection	48 00
Total expenditure	$ 21,310 50

Work commenced, July 25.
Work completed, August 16.
Depth of water made below zero, 10 feet.

DREDGING SEASON 1911.

Dredging done at Coburg, Ont.
Under contract with R. Weddell & Co.
Name of dredge, *Trenton*.

	Quantity Removed.	Price per Cubic Yard.	Method of Measurment.
Class A			
Class B			
Class C	6,000 cubic yards.	50c.	Scow.
Total	6,000 cubic yards.	50c.	

Amount paid contractor	$ 3,000 00
" " for inspection	52 00
Total expenditure	$ 3,050 00

Work commenced, November 25.
Work completed, December 9.
Depth of water made below zero, 18 to 20 feet.

ALBERTA AND SASKATCHEWAN.

ANNUAL REPORT from April 1, 1911, to March 31, 1912.

DREDGE 'ATHABASKA.' OWNER, DEPARTMENT OF PUBLIC WORKS.

Localities where Dredging was Performed.	Date. From	Date. To	Depth of Water made below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cts.
Lesser Slave River	May 27	July 6	4·5 feet.	2,570 in place.	3,897 59	.97⅛ (in place).
Grouard, Lesser Slave Lake	Sept. 27	Oct. 19	4·5 "	1,442 "		

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November.	December.	January, February and March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	338 25	445 00	445 00	445 00	95 77	222 67	353 77	45 00	45 00	189 00	2,625 46
Provisions	218 82	33 40	143 38	85 45	126 25	214 49	28 40		8 50	42 60	901 29
Fuel						10 50	27 00	10 00		18 00	65 50
Stores and Equipment	112 13	26 74	73 94	80 10	24 32		5 00			14 45	336 68
*Repairs						125 00					125 00
Pilotage and Towage						13 50	15 90	151 55			277 46
Contingencies	64 11	15 00		17 50							
	733 31	520 14	662 22	628 05	246 34	587 16	430 07	206 55	53 50	264 05	4,331 39
Amount expended in connection with work other than dredging											433 80
Amount expended in connection with repairs and dredging work											$3,897 59

Amount estimated as expended on repairs alone including crew's time and provisions $1,109 96

* All repairs were performed by crew of dredge.

BRITISH COLUMBIA.

PERFORMANCE of Suction Dredge 'Fruhling' for the Twelve Months, April 1, 1911 to March 31, 1912.

——	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	January	Feb.	March.	Totals.
Cubic yards material handled	28,000	75,200	64,000	32,800	19,200	68,300	64,800	48,000	66,400	7,600	81,600	44,800	669,100
Kind of material	Sand.	Sand.	Sand.	Sand.	Mud.	Sand.	Sand.	Sand.	Sand.	Sand.	Sand.	Sand.	.. ....
Total hours on duty	198·00	233·75	218·75	225·00	242·00	206·5	211·00	229·5	215·5	229·00	219·5	224·5	265·3
Hours actually pumping	28·00	72·25	59·5	32·00	22·00	68·25	60 75	45·5	63·75	72·75	78·75	43·75	647·25
Yards per hour actually pumping	1,000·00	1,040·00	1,075·00	1,025·00	870·00	1,000·00	1,066·00	1,055·00	1,041·00	1,044·00	1,036·00	1,024·00	Average 1,034·00

Cost of operation, $45,768.65. Cost per cubic yard, 6·8 cents.

PERFORMANCE of Agitator Suction Dredge 'King Edward' for the Twelve Months, April 1, 1911 to March 31, 1912.

Cubic yards material handled	11,200	55,400	5,350	7,370	57,750	58,600	45,000	47,950	27,400	28,500	8,700	26,300	379,520
Kind of material	Silt and sand.	Sand.	Sand.	Sand.	Sand.	Sand.	Sand.	Sand.	Sand.	Sand.	Gravel.	Gravel.	....
Total hours on duty	200·5	231·00	214·5	219·5	238·5	211·5	215·00	233·00	215·00	229·00	219·5	229·5	2656·5
Hours actually pumping	22·00	103·75	12·00	36·75	197·00	111·25	81·75	97·5	86·25	44·5	43·5	159·00	995·25
Yards per hour actually pumping	509·00	500·00	446·00	206·00	239·00	526·00	550·00	492·00	318·00	640·00	200·00	165·00	Average 381·00

Total cost of operation, $45,553.49. Cost per cubic yard, 12c.

BRITISH COLUMBIA.—*Continued.*

Performance of Dipper Dredge 'Ajax' for the Twelve Months, April 1, 1911, to March 31, 1912.

—	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	January	Feb.	March.	Totals.
Cubic yards material handled	7,800	.....	17,095	16,450	15,810	16,220	10,710	1,615	22,320	10,725	18,725	16,720	154,190
Kind of material	Mud and clay.	.....	Sand and mud.	Clay.	Clay and sand.	Sand clay and gravel.	Clay and gravel.	40 rock, 1575 clay.	Silt, clay.	10,455 clay, 270 rock.	175 rock, 18,550 clay.	2965 rock, 13755 clay	.....
Total hours on duty	196·00	229·00	214·5	219·5	238·5	201·00	219·5	229·00	215·00	229·00	219·5	220·00	2,630·50
Hours actually dredging	30·75	.....	79·5	78·00	105·25	118·5	74·25	20·25	124·00	72·25	107·5	130·25	940·5
Yards per hour actually dredging	253·00	.....	215·00	211·00	150·00	137·00	144·00	79·00	180·00	148·00	174·00	128·00	Average 164·00

Cost of operation, $47,307.45. Cost per cubic yard, 30·7 cents.

Performance of Dipper Dredge 'Mudlark' for the Twelve Months, April 1, 1911, to March 31, 1912.

Cubic yards material handled	12,050	8,550	1,950	.....	8,750	13,350	13,350	7,600	5,425	.....	8,000	11,650	90,675
Kind of material	Mud and clay.	Mud and clay.	Mud and clay.	Mud and clay.	Mud and clay.	Mud and clay.	Silt, mud, clay.	Silt, mud, clay.	Heavy clay.	.....	Rock, clay, hardpan	Hard-pan, clay.	.....
Total hours on duty	196·00	246·00	210·00	219·5	238·5	201 00	219·5	229·00	215·00	229·00	219·5	220·00	2,643·00
Hours actually dredging	105·00	92·00	19·00	.....	80·5	126·00	107·5	68·5	66·00	.....	123·00	143·00	930.5
Yards per hour actually dredging	115·00	94·00	103·00	.....	108·00	106·00	133·00	111·00	82·00	.....	65·00	80·00	Average 96·00

Cost of operation, $38,958.77. Cost per cubic yard, 42·9 cents.

PERFORMANCE of Elevator Dredge 'Mastodon' for the Twelve Months, April 1, 1911, to March 31, 1912.

Cubic yards material handled	2,560	26,360	75,390	71,100	82,500	49,500	53,400	15,900	13,200	45,950	81,560	103,800	621,000
Kind of material	Silt, sand, gravel.	Gravel.	Gravel.	Gravel.	Clay and gravel.	Clay and gravel.	Clay and gravel.	Gravel.	Gravel.	Gravel.	Gravel.	Gravel.	.....
Total hours on duty	67·5	246·5	219·5	219·5	244·5	252·00	241·00	271·00	215·00	229·00	314·00	413·5	2,933·00
Hours actually dredging	12·00	66·5	151·25	128·5	152·5	115·00	107·25	30·75	26·75	75·25	136·25	188·75	1,189·00
Yards per hour actually dredging	221·00	395·00	343·00	553·00	541·00	430·00	497·00	517·00	493·00	610·00	603·00	549·00	Average 522·00

Total cost of operation, $103,419.92. Cost per cubic yard, 16·6 cents.

BRITISH COLUMBIA.—*Continued.*

DREDGE 'PELICAN.'

Locality where Dredging was Performed.	Date. From	Date. To	Depth of Water Below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	
Campbell's Bar	April 1	May 20	4·0 feet.	12,420		
Chase	July 18	September 23	4 0 feet.	5,367		
Coburn's Bar	September 25	November 18	5·5 feet.	15,372		
Shaw's Bar	November 23	December 28				
Shaw's Bar	January 19	March 31	4·0 feet.	28,000	12,913 50	21·1 cents.

DETAILS OF EXPENDITURE.

——	April.	May.	June. July.	August.	September	October.	November	December	January.	February.	March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	408 00	420 00	793 35	769 65	939 50	418 60	447 50	735 25	382 50	712 25	740 00	6,766 60
Provisions	308 90	335 05	475 26	229 96	486 10	131 84	313 90	280 69	194 48	282 32	249 91	3,288 41
Fuel		16 00					35 00	240 75		398 25		690 00
Repairs	23 65		196 20	1,657 56	138 80	52 98	19 00	29 35		19 75	13 00	2,150 29
Contingencies			3 50			14 70						18 20
Totals	740 55	771 05	1,468 31	2,657 17	1,564 40	618 12	815 40	1,286 04	576 98	1,412 57	1,002 91	12,913 50

DREDGE 'HERON.'

Locality where Dredging was Performed.	Date. From	Date. To	Depth of Water Below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	
Okanagan River	April 1	October 31	2·0 feet.			Dredging cost cannot be separated from total cost.
	February 16	March 31	2·0 feet.	15,000	14,400 84	

DETAILS OF EXPENDITURE.

—	April.	May.	June.	July.	August.	September.	October.	November. December. January.	February.	March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	341 50	491 40	951 58	890 82	846 68	1,104 25	1,335 00	182 00	364 29	462 25	6,969 77
Provisions	197 87	257 66	270 86	362 13	277 48	385 50	183 36		213 69	156 83	2,305 38
Fuel			54 00	9 00					40 25	130 04	233 29
Repairs	17 36	52 39	129 61	30 50	55 75	2 75	12 00		56 67	4 20	361 23
Lumber, Piling and Hardware	78 30	171 15	1,399 07	707 25	585 31	547 48	398 97			150 62	4,038 15
Contingencies	68 00	12 00	18 64	129 86	60 00	27 92	57 25	28 50		90 85	493 02
Totals	703 03	984 60	2,823 76	2,129 56	1,825 22	2,067 90	1,986 58	210 50	674 90	994 79	14,400 84

BRITISH COLUMBIA.—*Continued.*

DREDGE 'NAKUSP'.

Localities where Dredging was Performed.	Date. From.	Date. To.	Depth of Water below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cents.
Columbia River at Narrows	April 1	April 12	7 feet.	2,766		
Pingston Creek	" 19	" 28	5 "	3,733		
Col. River Narrows	Oct. 6	March 31	7 "	56,430	7,047 65	11·2

DETAILS OF EXPENDITURE.

—	April.	May, June, July.	August.	September	October.	November.	December.	January.	February.	March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages	476 00	180 00	103 70	354 66	543 07	545 00	536 28	545 00	524 00	540 00	4,347 71
Provisions	118 59			113 70	141 85	146 92	127 55	273 26	195 15	189 15	1,306 17
Fuel						68 50	112 75	113 75	86 62	127 75	509 37
Repairs and Equipment				339 32		14 00	111 53	79 10	99 48	88 40	731 83
Contingencies	11 03	10 02				109 31			22 03		152 57
Totals	605 62	190 20	103 70	807 68	684 92	883 73	888 11	1,011 11	927 28	945 30	7,047 65

DREDGE 'BITTERN'.

Locality where Dredging was performed.	Date. From.	Date. To.	Depth of Water below Zero.	Cubic Yards Removed.	Expenditure.	Cost per Cubic Yard.
					$ cts.	Cents.
Kootenay Landing	May 25 Nov. 3	Aug. 9 March 31	Dredged on slope 12 feet.	18,560 37,712	17,139 72	30·5

DETAILS OF EXPENDITURE,

	April.	May.	June.	July.	August.	September October.	November	December	January.	February.	March.	Totals.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wages		495 96	556 50	564 17	722 00	925 21	573 50	592 64	577 41	575 00	575 00	6,157 39
Provisions		312 93	204 53	261 61	227 91	207 09	311 32	137 57	183 43	156 03	160 20	2,162 62
Fuel		174 80				53 95	485 60		296 00			920 35
Repairs and Equipment	2 25	1,127 29	291 82	64 86	513 73	990 31	120 18	53 54	172 10	112 07	25 75	3,473 90
Tug hire and Towing		40 00			40 00	20 00	105 00	1,120 00	840 00	1,000 00	1,000 00	4,165 00
Contingencies		2 50	201 96	2 60		5 35	22 45	3 70	1 05	20 85		260 46
Totals	2 25	2,153 48	1,254 81	893 24	1,503 64	2,201 91	1,618 05	1,907 45	1,979 99	1,863 95	1,760 95	17,139 72

Cost of Operation of B. C. Dredging Fleet for Twelve Months ending March 31, 1912.

	Pay Roll.	Provisions and Ice.	Boarding Equipment.	Laundry.	Engine Room Supplies.	Hardware and Ship Chandlery.	Coal.	Water.	—
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dredge 'Fruhling'	15,799 37	4,266 38	281 80	56 25	1,407 34	2,129 45	10,903 56	21 50	
Dredge 'King Edward'	15,744 76	4,201 59	292 80	72 15	1,353 06	1,733 78	8,171 35	7 05	
Dredge 'Mastodon'	22,425 00	7,257 90	731 55	89 65	2,356 87	4,531 61	11,210 68	6 00	
Dredge 'Ajax'	11,084 47	4,824 95	86 40	43 39	517 93	3,065 67	7,517 20	104 67	
Dredge 'Mudlark'	9,112 48	3,364 62	119 55	30 49	477 72	1,659 46	3,613 50	78 59	
Lobnitz Rock Breaker No. 1	3,890 85	1,145 75	73 30	7 82	12 80	894 19	1,196 00	4 80	
Submarine Drilling Plant	7,401 00	.....	.....	.....	10 57	519 08	71 90		
Snagboat 'Samson'	9,573 81	3,049 01	36 60	93 56	495 55	845 37	2,476 15		
Snagboat 'Cygnet'	6,539 01	1,967 51	61 11	10 50	.....	387 44	1,109 00		
Snagboat 'Naas River'	2,159 46	858 36	13 75	.....	6 22	36 29	118 75		
Tug 'Petrel'	4,347 23	693 32	62 65	.....	241 59	707 07	340 30		
Tug 'Princess'	2,155 57	4 50	.....	.....	32 70	100 76			
Tug 'Pt. Hope'	1,926 92	62 64	21 05	.....	114 67	285 94	60 00		
Tug 'Pt. Garry'	1,916 41	320 92	61 10	12 05	851 46	413 80			
Tug 'Pt. Ellice'	2,982 55	1,067 68	.....	1 30	255 73	709 71	.....	4 00	
Tug 'Pt. Grey'	584 49	357 35	90 70	.....	354 13	459 67			
Dredge 'Pelican'									
Dredge 'Heron'									
Dredge 'Nakusp'				...Interior Division.....					57,536 10
Dredge 'Bittern'									
Miscellaneous Items (charged direct to 'Dredging B. C.')	1,297 20	20 88	.....	.....	49 78	.....	.....	120 97	
	118,940 58	33,463 36	1,932 36	417 16	8,488 12	18,479 29	46,788 39	347 58	57,536 10

Cost of Operation of B. C. Dredging Fleet for Twelve Months ending March 31, 1912.—*Continued.*

	Drilling Supplies	Dynamite.	Tug Hire.	Miscellaneous.	Rent of Scows.	Travelling expenses	New Equipment.	Repairs to Tug.	Repairs to Scows.	Repairs to Dredge.	Total Maintenance.	Total Cost of Operation.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts	$ cts.	$ cts	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dredge 'Fruhling'				68 85		15 30	105 50			10,713 35	35,055 30	45,768 65
Dredge 'King Edward'			2,740 00	838 35		31 45	85 00		1,523 93	6,320 92	35,271 34	43,116 19
Dredge 'Mastodon'			27,450 91	2,684 59	389 00	88 30	1,724 50	6 60	4,136 87	8,030 07	80,896 56	93,070 10
Dredge 'Ajax'				504 10			202 70		1,574 79	10,993 63	27,951 48	40,519 90
Dredge 'Mudlark'			1,150 00	520 86			505 00		3,628 64	7,649 25	20,632 27	31,910 16
Lobnitz Rock Breaker No. 1			373 50	577 08	63 12	3 50				784 21	8,242 71	9,026 92
Submarine Drilling Plant	983 16	797 06		195 35						414 26	9,978 12	10,392 38
Snagboat 'Samson'				562 38						1,986 57	17,132 43	19,119 00
Snagboat 'Cygnet'				34 00		82 95				97 81	10,191 52	10,289 33
Snagboat 'Naas River'				1 50							3,194 33	3,194 33
Tug 'Petrel'				14 10				689 37			6,406 26	7,095 63
Tug 'Princess'								577 64			2,293 53	2,871 17
Tug 'Pt. Hope'				482 77				1,223 45			2,953 99	4,177 44
Tug 'Pt. Garry'				84 50			265 00	617 81			3,925 24	4,543 05
Tug 'Pt. Ellice'				306 29		6 00		646 82			5,333 26	5,980 08
Tug 'Pt. Grey'				18 28		9 50		81 79			1,874 12	1,955 91
Dredge 'Pelican'	Interior Division									2,652 99	57,536 10	12,801 12
Dredge 'Heron'										70 28		8,577 88
Dredge 'Nakusp'										853 97		6,886 29
Dredge 'Bittern'										2,111 67		15,747 49
Miscellaneous Items (charged direct to 'Dredging B. C.')				212 98	55 50	480 79	441 73				7,640 25	7,640 25
								Total Repairs. $67,386 69			Total maintenance	Total cost of operation.
	983 16	797 06	31,714 41	7,105 98	507 62	717 79	3,329 43	3,843 48	10,864 23	52,678 98	331,548 39	398,935 08

STATEMENT showing cost of Dredges in British Columbia for 1911-12, showing total amounts of material dredged, and cost per cubic yard, including repairs to Dredges, Tugs, Scows, &c.

Name of Dredge.	Cost of Operating.	Cost of Repairing.	Total Cost.	Total amount of Material Dredged. Cubic Yards	Cost per Yard.
	$ cts.	$ cts.	$ cts.		Cts.
'King Edward'	37,295 23	8,247 61	46,542 84	379,520	12·25
'Fruhling'	35,027 10	10,713 35	45,740 45	669,100	6·8
'Ajax'	34,266 97	11,642 42	45,909 39	154,910	29
'Mud Lark'	25,879 79	10,560 65	36,440 44	90,675	40
'Mastodon'	89,619 23	10,944 60	100,563 83	621,310	16
'Drill Plant'	11,497 82	....	11,497 82	1,693 Rock.	$6.79

DREDGING PLANT UNDER THE CONTROL OF THE DEPARTMENT OF PUBLIC WORKS, 1911.

Dredges.

MARITIME PROVINCES.

'Canada'—type: self propelling elevator dredge.

Length over all, 132 feet; beam over all, 20 feet 5 inches; draught, 6 feet; working depth from 4 to 17 feet; constructed of iron, 2 engines; Scotch boiler; pressure allowed, 60 lbs.; average daily dredging capacity, 750 cubic yards; burns about 3 tons of coal per working day of 10 hours.

Purchased from Simons & Co., Renfrew, Scotland, 1872..

'Cape Breton'—type: dipper dredge.

Length over all, 91 feet 6 inches; beam over all, 38 feet 3 inches; draught when towing 5 feet 9 inches; working depths from 15 to 32 feet; constructed of steel; 6 engines; marine boiler; pressure allowed, 140 lbs.; one 3 cubic yard dipper and one 5 cubic yard dipper, used according to hardness of material; average daily dredging capacity, 1,750 cubic yards; burns about 1½ tons of coal per day of 10 hours.

Purchased from Carrier, Laine & Co., Quebec, in 1896.

'Fielding'—type: self propelling elevator and hydraulic dredge.

Length over all, 147 feet; beam over all, 42 feet; draught, 15 feet 6 inches; working depth from 16 to 54 feet with elevator; constructed of steel; 3 engines; cylindrical boiler, pressure allowed, 180 lbs.; average daily dredging capacity, 5,000 cubic yards; burns about 6 tons of coal per day of 10 hours.

Built by Government at Sorel, 1905.

'Geo. McKenzie'—type: dipper dredge, 2 cubic yards capacity.

Length over all, 86 feet 6 inches; beam over all, 29 feet 6 inches; draught when towing, 5 feet 5 inches; working depths from 7 to 26 feet; constructed of wood; one engine; locomotive boiler, pressure allowed, 65 lbs.; average daily dredging capacity, 300 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Purchased from John Ross and McKay in 1879.

Hull reconstructed in 1902.

'Montague'—type: dipper dredge, 2 cubic yards capacity.

Length over all, 90 feet; beam over all, 38 feet; draught when towing, 5 feet; working depths from 7 to 26 feet; constructed of steel; 3 engines; marine boiler; pressure allowed, 140 lbs.; average daily dredging, 700 cubic yards; burns about 1½ tons of coal per day of 10 hours.

Purchased from Bertram Engine Works, Toronto, Ont., 1906.

'Northumberland'—type: suction dredge.

Length over all, 138 feet; beam over all, 52 feet; draught without spuds, 5 feet 8 inches; working depths from 5 to 50 feet; constructed of steel; 12 engines; Scotch

boilers; pressure allowed, 160 lbs.; average daily dredging capacity, 4,000 cubic yards; burns about 8 tons of coal per day of 10 hours.

Purchased from Polson Iron Works, Toronto, Ont., 1906.

'Pownal'—type: dipper dredge, 1 cubic yard capacity.

Length over all, 65 feet; beam over all, 25 feet; draught when towing, 4 feet; working depths from 6 to 20 feet; constructed of wood; 2 engines; Scotch marine boiler, pressure allowed, 125 lbs.; average daily dredging capacity, 300 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Purchased from Burns & Waters.

'Prince Edward'—type: dipper dredge, 1¼ cubic yards capacity.

Length over all, 80 feet; beam over all, 26 feet; draught when towing, 5 feet 6 inches; working depths from 9 to 25 feet; constructed of wood; one engine; locomotive boiler, pressure allowed 50 lbs.; average daily dredging capacity, 450 cubic yards; burns about ¾ ton of coal per day of 10 hours.

Purchased from local government, P.E.I., 1873.

'Restigouche'—type: self propelling hydraulic dredge.

Length over all, 161 feet 8 inches; beam over all, 30 feet; draught light, 5 feet 6 inches; working depths from 14 to 40 feet; constructed of steel; one engine; Scotch boiler, pressure allowed, 160 lbs.; average daily dredging capacity, 2,300 cubic yards; burns about 3½ tons of coal per day of 10 hours.

Purchased from United States Engineering Co.

'St. Lawrence'—type: self propelling elevator dredge.

Length over all, 170 feet; beam over all, 80 feet; draught, 8 feet; working depths from 10 to 28 feet; constructed of steel; 2 engines; marine boiler, pressure allowed, 60 lbs.; average daily dredging capacity, 1,400 cubic yards; burns about 1 ton of coal per day of 10 hours.

Purchased from Simons & Co., Renfrew, Scotland, 1874.

'No. 1'—type: stone lifter.

Length over all, 100 feet; beam over all, 35 feet; draught 5 feet 2 inches; greatest working depth, 40 feet; steel construction; capacity of grips, 50 tons.

Purchased from John Inglis Co., Toronto, Ont., 1907.

ONTARIO AND QUEBEC.

'Challenge'—type: dipper dredge, 2 cubic yards capacity.

Length over all, 65 feet; beam over all, 25 feet; draught when towing, 4 feet; working depths from 7 feet 6 inches to 20 feet; constructed of wood; one engine; marine boiler, pressure allowed, 90 lbs.; average daily dredging capacity, 500 cubic yards; burns about 1½ tons coal per day of 10 hours.

Built by Government at Collingwood. Ont., 1885.

'Deschenes'—type: dipper dredge, 1 cubic yard capacity.

Length over all, 50 feet; beam over all, 20 feet; draught when towing, 2 feet; working depths from 4 to 15 feet; constructed of wood; one engine; return tubular

boiler, pressure allowed, 100 lbs.; average daily dredging capacity, 250 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Purchased from G. C. Hurdman, 1909.

'Industry'—type: dipper dredge, one 4 cubic yard and one 10 cubit yard dipper used according to hardness of material.

Length over all, 133 feet 4 inches; beam over all, 44 feet; draught when towing, 9 feet; working depths from 14 to 28 feet; constructed of wood; 8 engines; Scotch marine boiler, pressure allowed, 125 lbs.; average daily dredging capacity, 3,000 cubic yards; burns about 3½ tons of coal per day of 10 hours.

Purchased from St. Lawrence Power Co., G. K. Philips, 1908.

'International'—type: dipper dredge, 5 cubic yards capacity.

Length over all, 110 feet; beam over all, 42 feet; draught when towing, 6 feet; working depths from 10 to 58 feet; constructed of wood; one engine, compound $\frac{12\text{-}24}{14}$ marine boiler, pressure allowed, 120 lbs.; average daily dredging capacity, 1,250 cubic yards; burns about 2 tons of coal per day of 10 hours.

Purchased from M. Conley, 1903.

'Lake St. John'—type: dipper dredge, 1 cubic yard capacity.

Length over all, 75 feet; beam over all, 27 feet; draught when towing, 3 feet; working depths from 6 to 18 feet; constructed of wood; 2 engines; locomotive boiler, pressure allowed, 100 lbs; average daily dredging capacity, 200 cubic yards; burns about 2 cords of wood per day of 10 hours.

Purchased from Beatty & Sons, 1898.

'Mattawa'—type: dipper dredge, 2⅛ cubic yard capacity.

Length over all, 75 feet 6 inches; beam over all, 25 feet; draught when towing, 5 feet; working depths from 12 to 20 feet; constructed of wood; single engine, 12½ x 15; Fitzgibbon boiler, pressure allowed, 125 lbs; average daily dredging capacity, 850 cubic yards; burns about 1 ton of coal per day of 10 hours.

Built by Government at Sturgeon Falls, Ont., 1905.

'Nipissing'—type: dipper dredge, 2⅛ cubic yards capacity.

Length over all, 65 feet; beam over all, 25 feet; draught when towing, 4 feet; working depths from 8 to 20 feet; constructed of wood; one engine; marine boiler, pressure allowed, 100 lbs.; average daily dredging capacity, 575 cubic yards; burns about 1½ tons of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1889.

'No. 1'—type: dipper dredge, ¾ cubic yard capacity.

Length over all, 67 feet; beam over all, 26 feet; draught when towing, 4 feet; working depths from 6 to 15 feet; constructed of wood; one engine; locomotive boiler, pressure allowed, 125 lbs.; average daily dredging capacity, 250 cubic yards; burns about ¾ ton of coal per day of 10 hours.

Built by Government at St. Louis de Gonzague, 1905.

'No. 2'—type: dipper dredge, 1 cubic yard capacity.

Length over all, 60 feet; beam over all, 22 feet; draught when towing, 2 feet; working depths from 5 to 16 feet; constructed of wood; 2 engines; locomotive boiler,

pressure allowed, 125 lbs.; average daily dredging capacity, 300 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1906.

'No. 3'—type: dipper dredge, 1 cubic yard capacity.

Length over all, 60 feet; beam over all, 22 feet; draught when towing, 2 feet; working depths from 5 to 16 feet; constructed of wood; 2 engines; locomotive boiler, pressure allowed, 125 lbs.; average daily dredging capacity, 450 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1909.

'No. 4'—type: dipper dredge, 2½ cubic yards capacity.

Length over all, 90 feet; beam over all, 34 feet; draught when towing, 6 feet 6 inches; working depths from 8 to 22 feet; constructed of wood; 12 engines; Scotch marine boiler, pressure allowed, 140 lbs.; average daily dredging capacity, 900 cubic yards; burns about 2¾ tons of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1911.

'No. 5'—type: dipper dredge, 3½ cubic yards capacity.

Length over all, 85 feet; beam over all, 29 feet; draught when towing, 6 feet; working depths, 9 to 27 feet; constructed of wood; 2 engines; tubular boiler, pressure allowed 85 lbs; average daily dredging capacity, 500 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Purchased from Dominion Dredging Co., 1910.

'No. 5'—type: dipper dredge, 3½ cubic yards capacity.

Length over all 50 feet; beam over all 24 feet; draught when towing 4 feet 6 inches; working depth 4 feet 6 inches to any depth; constructed of wood; 2 engines; upright boiler, pressure allowed 100 lbs.; average daily dredging capacity 300 cubic yards; burns about 1 ton of coal per day of 10 hours.

Built by Government in 1911.

'Ontario'—type: dipper dredge, 3 cubic yards capacity.

Length over all, 72 feet; beam over all, 25 feet; draught when towing, 4 feet; working depths from 10 to 23 feet; constructed of wood; 2 engines; locomotive boiler, pressure allowed, 80 lbs.; average daily dredging capacity, 550 cubic yards; burns about 1 ton of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1900.

'Ottawa'—type: dipper dredge one 3 and one 5 cubic yards capacity dippers.

Length over all 97 feet 8 inches; beam over all 43 feet 1 inch; draught when towing, 6 feet; working depths from 15 to 36 feet; constructed of wood; 4 engines; Scotch marine boiler, pressure allowed, 120 lbs.; average daily dredging capacity, 850 cubic yards; burns about 2 tons of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1908.

'Progress'—type: dipper dredge, 3 cubic yards capacity.

Length over all, 94 feet; beam over all, 34 feet; draught when towing, 7 feet; working depths from 10 to 30 feet; steel and wood construction; 2 engines; locomotive

boiler, pressure allowed, 95 lbs.; average daily dredging capacity, 1,000 cubic yards; burns about 2 tons of coal per day of 10 hours.

Built by Government, Sorel, Que., 1902.

'Quebec'—type: dipper dredge, one 5 and one 8 yards dippers, used according to hardness of material.

Length over all, 106 feet 9 inches; beam over all, 36 feet 8 inches; draught when towing, 6 feet 5 inches; working depths from 16 to 42 feet; constructed of steel; 6 engines; marine boiler, pressure allowed, 145 lbs.; average daily dredging capacity, 2,700 cubic yards; burns about 3 tons of coal per day of 10 hours.

Purchased from Polson Iron Works, Toronto, 1908.

'Queen'—type: dipper dredge, 1½ cubic yard capacity.

Length over all, 66 feet; beam over all, 28 feet; draught when towing, 3 feet 6 inches; working depths from 7 to 20 feet; constructed of wood; single engine 8 inches x 16 inches, pressure allowed, 105 lbs.; average daily dredging capacity, 400 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Built by Government at Timiskaming, 1902.

'Richelieu'—type: dipper dredge, 1½ cubic yard capacity.

Length over all, 70 feet; beam over all, 22 feet; draught when towing, 5 feet; working depths from 7 to 16 feet; constructed of wood; one engine; Scotch tubular boiler, pressure allowed, 135 lbs.; average daily dredging capacity, 400 cubic yards; burns about 1 ton of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1903.

'Sir Richard'—type: dipper dredge, 3½ cubic yards capacity.

Length over all, 87 feet; beam over all, 33 feet 9 inches; draught when towing, 4 feet 6 inches; working depths from 9 to 20 feet; constructed of wood; 2 engines; locomotive boiler, pressure allowed, 95 lbs.; average daily dredging capacity, 600 cubic yards; burns about 1½ tons of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1901.

'St. Louis'—type: dipper dredge, ¾ cubic yard capacity.

Length over all, 60 feet; beam over all, 22 feet; draught when towing, 3 feet; working depths from 5 to 16 feet; constructed of wood; 2 engines; locomotive boiler, pressure allowed, 125 lbs.; average daily dredging capacity, 325 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Built by Government at Ottawa ship yard, 1907.

'St. Maurice'—type: dipper dredge, ¾ cubic yard capacity.

Length over all 70 feet; beam over all 23 feet 8 inches; draught when towing 3 feet 4 inches; working depths from 6 to 15 feet; constructed of wood; 2 engines; locomotive boiler, pressure allowed 100 lbs.; average daily dredging capacity 300 cubic yards; burns about 1¼ tons of coal per day of 10 hours.

Purchased from Beatty & Sons, Welland, Ont., 1899.

'No. 2'—type: stone lifter. Capacity of grips, 10 tons.

Length over all, 45 feet; beam oevr all, 25; draught, 2 feet; working depths from 3 to 16 feet; wood construction; 2 engines; upright boiler, pressure allowed, 90 lbs.; burns 1 ton of coal per working day of 10 hours.

Built by Government, Ottawa ship yard, 1898.

MANITOBA.

'Assiniboine'—type: hydraulic dredge.

Length over all, 115 feet; beam over all, 33 feet; draught when towing, 3 feet 10 inches; working depths from 4 feet 6 inches to 12 feet; constructed of wood; 4 engines; 2 Scotch boilers, pressure allowed, 150 lbs.; average daily dredging capacity, 725 cubic yards; burns about 2¼ tons of coal per day of 10 hours.

Purchased from Polson Iron Works, Toronto, Ont., 1906.

'Crane'—type: orange-peel bucket, 1½ cubic yards capacity.

Length over all, 80 feet; beam over all, 33 feet; draught when towing, 4 feet; working depth from 4 feet up; constructed of wood; 2 engines; Scotch boiler, pressure allowed, 150 lbs.; average daily dredging capacity, 600 cubic yards; burns about 1 ton of coal per working day of 10 hours.

Built by Government, 1911.

'Dauphin'—type: orange-peel bucket, 1¼ cubic yards capacity.

Length over all 60 feet; beam over all 32 feet; draught when towing 1 foot 10 inches; working depths from 2 feet 6 inches to ; constructed of wood; 1 engine; vertical boiler, pressure allowe d100 lbs.; average daily dredging capacity 250 cubic yards; burns about 1 cord of wood per day of 10 hours.

Built by Government, 1909.

'Red River'—type: dipper dredge, 1½ cubic yards capacity.

Length over all, 82 feet; beam over all, 34 feet; draught when towing, 2 feet 6 inches; working depths from 4 feet 6 inches to 15 feet; constructed of wood; 2 engines; marine boiler, pressure allowed, 130 lbs.; average daily dredging capacity, 350 cubic yards; burns about 1 ton of coal per day of 10 hours.

Built by Government, 1911.

'Winnipeg'—type: dipper dredge, 2 cubic yards capacity.

Length over all, 77 feet; beam over all, 37 feet; draught when towing, 4 feet 6 inches; working depths from 7 to 20 feet; constructed of wood; 6 engines; marine boiler, pressure allowed, 150 lbs.; average daily dredging capacity, 1,000 cubic yards; burns about 1½ tons of coal per day of 10 hours.

Built by Government, 1884.

SASKATCHEWAN AND ALBERTA.

'Athabasca'—type: orange-peel bucket, ⅔ cubic yard capacity.

Length over all, 52 feet; beam over all, 24 feet; draught when towing, 3 feet; working depths from 3 to 8 feet; constructed of wood; 1 engine; upright boiler, pressure allowed, 125 lbs.; average daily dredging capacity, 100 cubic yards; burns about ¾ cords of wood per day of 10 hours.

Built by Government, 1907.

'Last Mountain Lake'—type: dipper dredge, 1 cubic yard capacity.

Length over all, 64 feet; beam over all, 24 feet; draught when towing, 2 feet; working depths from 6 to 14 feet; constructed of wood; 2 engines; horizontal boiler,

pressure allowed, 125 lbs; average daily dredging capacity, 600 cubic yards; burns about ½ ton of coal per day of 10 hours.

Partly purchased from Burns & Waters, Ottawa, Ont., and partly built by Government, 1908.

'Hawke'—type: scow with hand derrick, capacity of grips, 1 ton.

Length over all, 48 feet; beam over all, 16 feet; draught, 1 foot; working depths from 1 to 6 feet; constructed of wood.

Purchased from provincial government, 1903.

BRITISH COLUMBIA.

'Ajax'—type: dipper dredge, one 3 and one 5 yards bucket.

Length over all, 110 feet 5 inches; beam over all, 38 feet; draught with spuds, 9 feet; working depths from 18 to 40 feet; constructed of steel; 10 engines; Scotch marine boiler, pressure allowed, 150 lbs.; average daily dredging capacity, 700 cubic yards; burns about 1½ tons of coal per day of 9 hours.

Purchased from Polson Iron Works, Toronto, Ont., 1908, and erected by same firm at New Westminster, B.C.

"Bittern'—type: orange-peel bucket dredge, 1 cubic yard.

Length over all, 70 feet; beam over all, 28 feet.
Greatest working depth.
Least working depth.
Average daily dredging capacity.

'Fruhling'—type: scraper-suction dredge. Self propelled by twin screws.

Length over all, 187 feet; beam over all, 34 feet 6 inches; draught loaded, 14 feet 6 inches; working depths from 16 to 45 feet; constructed of steel; 19 engines; 2 Scotch marine boilers, pressure allowed, 130 lbs.; average daily dredging capacity, 5,000 cubic yards; burns about 8 tons coal per day.

Purchased from S. Schichau, Hamburg, Germany, 1909.

'Heron'—type: orange-peel bucket, ½ cubic yard capacity.

Length over all, 50 feet; beam over all, 18 feet 8 inches; constructed of wood; 2 single engines, 6½ inches x 10 inches; vertical boiler; average daily dredging capacity, 125 cubic yards; burns about ½ ton of coal per day of 9 hours.

Built at Penticton, B.C., in 1908.

'King Edward'—type: 20 inch. agitator-suction dredge; self propelled.

Length over all, 125 feet; beam over all, 32 feet; draught, 5 feet; working depths from 6 to 45 feet; constructed of steel and wood; 10 engines; 2 water tube boilers, pressure allowed, 177 lbs.; average daily dredging capacity, 4,500 cubic yards; burns about 8 tons of coal per day of 9 hours.

Purchased from Polson Iron Works, Toronto, 1901, and erected by the same firm at New Westminster, B.C.

'Mastodon'—type: elevator dredge.

Length over all, 206 feet; beam over all, 36 feet 6 inches; working depths from 0 to 50 feet. Average daily dredging capacity, 5,000 cubic yards.

'Mudlark'—type: dipper dredge, 2½ cubic yards capacity.

Length over all, 90 feet 2 inches; beam over all, 30 feet 4 inches; draught with spuds, 5 feet 6 inches; working depths from 13 to 40 feet; constructed of wood; 5 engines; marine boiler, pressure allowed, 85 lbs.; average daily dredging capacity, 650 cubic yards; burns about 1½ tons of coal per day of 9 hours.

Purchased from R. P. Rithet & Co., Victoria, B.C., 1893.

'Nakusp'—type: orange-peel bucket dredge, 1 cubic yard capacity.

Length over all, 80 feet 8 inches; beam over all, 28 feet 2 inches; draught with spuds, 32 inches; constructed of wood; 2 single engines 7 x 9; locomotive boiler; average daily dredging capacity, 500 cubic yards; burns about ⅔ tons of coal per day of 9 hours. Changed from a ¾ yard dipper dredge by Government in 1908.

Purchased from Polson Iron Works, Toronto, Ont., 1902.

'Pelican'—type: orange-peel bucket dredge, ¾ cubic yard capacity.

Length over all, 58 feet; beam over all, 26 feet 8 inches; constructed of wood; 2 engines, 5½ x 8; vertical boiler; average daily dredging capacity, 275 cubic yards; burns about ½ ton of coal per day of 9 hours.

Built by Government at Kamloops, B.C., 1907.

'Cygnet'—(Snag boat)—type: stern-wheel river steamboat; steam winch on forward deck; built of wood; length over all, 118 feet 6 inches; beam over all, 27 feet; draught, 3 feet 6 inches; main engines, 2 sets 12 x 60; hoisting winch; burns about 1¼ tons of coal per day.

Purchased from the Victoria Machinery Depot Co., Victoria, 1908.

'Samson'—(snag-boat)—type: stern-wheel river steamboat; steam steering gear; steam winch on forward deck; built of wood; length over all, 133 feet 9 inches; beam over all, 30 feet; draught, 4 feet; two sets of propelling engines 14 x 60; hoisting winch; double cylinder 6 x 8 engine; gunboat type boiler; burns about 1½ tons of coal per day.

Purchased from Turpel & Sons, Victoria, B.C., 1905.

TUGS.

MARITIME PROVINCES.

'Canso'—Steel construction; length over all, 97 feet; beam over all, 23 feet 4 inches; draught including keel, 9 feet 6 inches; triple expansion engine $\frac{12\text{–}19\text{–}30}{20}$ return tubular boiler, pressure allowed, 180 lbs.; burns about 4 tons of coal per day of 10 hours.

Purchased from The New Burrill-Johnstone Iron Co., Yarmouth, N.S., 1910.

'Courtenay'—Wood construction; length over all, 75 feet; beam over all, 21 feet; draught including keel, 10 feet; non-condensing engine, 24 x 24; Scotch boiler; pressure allowed, 80 lbs.; burns about 1½ tons of coal per day of 10 hours.

Purchased from Tapley Bros.; St. John, N.B., 1908.

'Helena'—Steel construction; length over all, 115 feet; beam over all, 23 feet; draught including keel, 12 feet 3 inches; triple expansion engine $\frac{15\text{–}25\text{–}41}{25}$; Scotch boiler, pressure allowed 180 lbs.; burns about 4 tons of coal per day of 10 hours.

Purchased from Collingwood Ship Building Co., 1907.

'*Lisgar*'—Steel construction; length over all, 97 feet; beam over all, 22 feet; draught including keel, 9 feet 6 inches; triple expansion engine $\frac{12-19-30}{20}$; marine boiler, pressure allowed, 180 lbs.; burns about 2 tons of coal per day of 10 hours.

Purchased from La Cie Pontbriand, Sorel, Que., 1909.

'*Sogenada*'—Steel construction; length over all, 75 feet 5 inches; beam over all, 15 feet 7 inches; fore and aft compound condensing $\frac{14-30}{21}$; Scotch boiler (10 feet 3 inches x 9 inches) pressure allowed, 140 lbs.

Purchased from Canadian General Development Co., July 26, 1912.

ONTARIO AND QUEBEC.

'*Alva*'—Wood construction; length over all, 50 feet; beam over all, 12 feet 6 inches; draught including keel, 5 feet 6 inches; compound engine $\frac{9-18}{12}$; Fitzgibbon boiler, pressure allowed, 110 lbs.; burns about 1 ton of coal per day of 10 hours.

Purchased from Rev. Father Cousineau, 1911.

'*Annette*'—Wood construction; length over all, 62 feet; beam over all, 13 feet; draught including keel, 3 feet; compound engine $\frac{5 \times 10}{8}$; upright boiler, pressure allowed, 135 lbs.; burns about 2½ tons of coal per day of 10 hours.

Built by Government, Sorel, Que., 1901.

'*Aylmer*'—Composite construction, twin screw; length over all, 45 feet 4 inches; beam over all, 11 feet 6 inches; draught including keel, 3 feet; 2 engines 6 x 7 each; Fitzgibbon boiler, pressure allowed 130 lbs.; burns about 1 ton of coal per day of 10 hours.

Purchased from Polson Iron Works, Toronto, 1910.

'*Blanche*'—Wood construction; length over all, 55 feet; beam over all, 11 feet; draught including keel, 5 feet; one engine 10 x 10; Fitzgibbon boiler, pressure allowed, 125 lbs.; burns about ¾ ton of coal per day of 10 hours.

Purchased from Capt. H. Bonenfant, about 1903.

'*Catherine C.*'—Wood construction; length over all, 70 feet; beam over all, 14 feet; draught including keel, 6 feet 6 inches; single engine 15 x 15; Fitzgibbon boiler, pressure allowed, 110 lbs.; burns about 1 ton of coal per day of 10 hours.

Purchased by Government, 8th June, 1908.

'*Cliffside*'—Wood construction; length over all, 70 feet; beam over all, 14 feet; draught including keel, 6 feet 6 inches; single engine 15 x 15; Fitzgibbon boiler, pressure allowed, 110 lbs.; burns about 2½ tons of coal per day of 10 hours.

Purchased from Ottawa Forwarding Co., Ottawa, 1910.

'*Daisy*'—Wood construction; length over all, 45 feet; beam over all, 11 feet; draught including keel, 4 feet 6 inches; single engine 9 x 10; Fitzgibbon boiler, pressure allowed, 110 lbs.; burns about 1 ton of coal per day of 10 hours.

Probably built by Government about 25 years ago.

'*Delisle*'—Wood construction; length over all, 71 feet; beam over all, 15 feet; draught including keel, 8 feet; single engine 18 x 20; marine boiler, pressure allowed, 125 lbs.; burns about 2½ tons of coal per day of 10 hours.

Probabaly built by Government at Sorel about 25 years ago.

'*Dora*'—Wood construction; length over all, 60 feet; beam over all, 12 feet; draught including keel, 6 feet; single engine 10 x 12, marine boiler, pressure allowed, 120 lbs.; burns about 2 tons of coal per day of 10 hours.

Probably purchased from John Lumsden about 1903.

'*Eileen*'—Wood construction; length over all, 45 feet; beam over all, 13 feet 6 inches; draught including keel, 5 feet; single engine 12 x 12; marine boiler, pressure about 130 lbs.; burns about 1 ton of coal per day of 10 hours.

Purchased from W. H. Kelly Lumber Co., Buckingham, 1908.

'*Fashion*'—Wood construction; length over all, 60 feet; 8 inches; beam over all, 16 feet 6 inches; draught including keel, 7 feet 6 inches; compound engine $\frac{14\text{–}24}{13}$; Fitzgibbon boiler, pressure allowed, 125 lbs.; burns about 2½ tons of coal per day of 10 hours.

Purchased from Dominion Dredging Co., Ottawa, 1910.

'*Hercules*'—Steel construction; length over all, 105 feet; beam over all, 23 feet; draught including keel, 10 feet 6 inches; triple expansion engine $\frac{13\frac{1}{2}\text{–}22\text{–}36}{21}$; Scotch marine boiler, pressure allowed, 175 lbs; burns about 3½ tons coal per day of 10 hours.

Purchased from Polson Iron Works, Toronto, 1906.

'*Lion*'—Wood construction; length over all, 30 feet; beam over all, 8 feet; draught including keel, 3 feet 6 inches; compound engine $\frac{5\text{–}9}{6}$; upright boiler, pressure allowed, 150 lbs.; burns about ½ ton of coal per day of 10 hours.

Transferred from clerk of works of Quebec, to this branch, about 1906.

'*Marie Louise*'—Wood construction; length over all, 55 feet; beam over all, 15 feet; draught including keel, 4½ feet; single engine, 8 x 9; marine boiler, pressure allowed, 80 lbs.; burns about 2 cords of wood per day of 10 hours.

Built by Government, 1899.

'*Mina G.*'—Wood construction; length over all, 45 feet; beam over all, 13 feet 6 inches; draught including keel 5 feet; single engine 12 x 12; marine boiler, pressure allowed, 130 lbs.; burns about 1 ton of coal per day of 10 hours.

Purchased from W. H. Kelly Lumber Co., Buckingham, 1910.

'*Monitor*'—Steel construction; length over all, 78 feet; beam over all, 18 feet; draught including keel, 8 feet 9 inches; 3 cylinders $\frac{12\text{–}12\text{–}12}{20}$ low pressure engine; Scotch marine boiler, pressure allowed, 140 lbs.; burns about 3 tons of coal per day of 10 hours.

Purchased from J. & R. Weir, Montreal, 1899.

'*Ottawa*'—Wood construction; length over all, 59 feet; beam over all, 14 feet; draught including keel, 6 feet 5 inches; compound engine $\frac{11\text{–}20}{18}$; Scotch tubular boiler, pressure allowed, 130 lbs.; burns about 1 ton of coal per day of 10 hours.

Rebuilt in oak, Ottawa shipyard, 1909.

'*Peel*'—Steel construction; length over all, 97 feet 6 inches; beam over all, 22 feet; draught including keel, 9 feet 6 inches; triple expansion engine $\frac{12\text{–}19\text{–}30}{20}$; Scotch marine boiler, pressure allowed, 180 lbs.; burns about 2 tons of coal per day of 10 hours.

Purchased from La Cie Pontbriand, Sorel, Que., 1909.

'Rona'—Wood construction; length over all, 85 feet; beam over all, 20 feet; draught including keel, 8 feet; compound engine $\frac{10-20}{16-\frac{2}{3}}$; upright boiler, pressure allowed, 130 lbs.; burns about one ton of coal per day of 10 hours.

Purchased from J. W. Hatt, Liverpool, N.S., 1903.

'Sir John'—Wood construction; length over all, 81 feet 6 inches; beam over all, 17 feet 3 inches; draught including keel, 7 feet 6 inches; single engine 16 x 20; Fitzgibbon boiler, pressure allowed, 130 lbs.; burns about 3 tons of coal per day of 10 hours.

Probably built by Government at Sorel about 25 years ago.

'Storm King'—Wood construction; length over all, 92 feet; beam over all, 19 feet 6 inches; draught including keel, 12 feet; compound engine $\frac{16-32}{24}$; marine boiler, pressure allowed, 110 lbs.; burns about 2 tons of coal per day of 10 hours.

Purchased from M. Conley, 1903.

'St. Paul'—Wood construction; length over all, 72 feet; beam over all, 16 feet; draught including keel, 8 feet; compound engine $\frac{12-24}{20}$; marine boiler, pressure allowed, 125 lbs.; burns about 3¼ tons of coal per day of 10 hours.

Probably built by Government at Sorel about 25 years ago.

'Archie Stewart'—Wood construction; length over all, 81 feet 5 inches; beam over all, 18 feet 8 inches; draught 6 feet 6 inches; simple non-condensing engine 20 x 18; Scotch boiler, pressure allowed, 125 lbs.

Purchased from Ottawa Transportation Co., July 25, 1912.

'Trudeau'—Wood construction; length over all, 80 feet; beam over all, 18 feet 6 inches; draught including keel, 7 feet 10 inches; single engine 16 x 18; marine boiler, pressure allowed, 120 lbs.; burns about 2 tons of coal per day of 10 hours.

Probably built by Government at Sorel about 25 years ago.

'Witherbee '—Steel construction; length over all, 115 feet; beam over all, 21 feet; draught including keel, 10 feet; compound engine $\frac{18-35}{24}$; tubular boiler, pressure allowed, 90 lbs.; burns about 2 tons of coal per day of 10 hours.

Purchased from Hon. J. C. Kaine, Quebec, 1910.

'Speedy'—Steel construction; length over all, 125 feet; beam over all, 20 feet; draught including keel, 11 feet; triple expansion engine $\frac{10-16-26}{18}$; Scotch marine boiler, pressure allowed, 200 lbs.; burns about 4½ tons of coal per day of 10 hours.

Purchased from Gardner & Cox, New York, 1905.

MANITOBA.

'Carberry'—Wood construction; length over all, 69 feet 8 inches; beam over all, 16 feet 5 inches; draught including keel, 5 feet; 2 single engines each 10 x 10; marine boiler, pressure allowed, 100 lbs.; burns about 2 cords of wood per day of 10 hours.

Purchased from Lake Manitoba Quarry and Transportation Co., 1905.

'Friday'—Wood construction; length over all, 60 feet; beam over all, 15 feet; draught including keel, 6 feet; high pressure engine 12 x 12; Scotch boiler, pressure allowed, 150 lbs.; burns about 1 ton of coal per day of 10 hours.

Built by Government, 1911.

'*Lisgar*'—Wood construction; length over all, 44 feet; beam over all, 13 feet 7 inches; draught including keel, 5 feet; single engine 9 x 9; marine boiler, pressure allowed, 150 lbs.; burns about ¾ tons of coal per day of 10 hours.

Built by Government, Selkirk, Man., 1910.

'*Sir Hector*'—Wood construction; length over all 72 feet; beam over all 16 feet; draught including keel, 9 feet; single engine 16 x 20; marine boiler, pressure allowed, 150 lbs.; burns about 2½ tons of coal per day of 10 hours.

Purchased from R. T. Morrel, Collingwood, Ont., 1908.

'*Victoria*'—Wood construction; length over all, 68 feet; beam over all, 14 feet 6 inches; draught including keel, 7 feet; compound engine $\frac{8-1}{12}$; Fitzgibbon boiler, pressure allowed, 155 lbs.; burns about 1 ton of coal per day of 10 hours.

Built by Government, Selkirk, Man., 1905.

ALBERTA AND SASKATCHEWAN.

'*Ruby*'—Wood construction; length over all, 45 feet; beam over all, 12 feet; draught including keel, 3 feet 6 inches; single engine 6 x 7; Fitzgibbon boiler, pressure allowed, 140 lbs.; burns about ¾ ton of coal per day of 10 hours.

Purchased from Polson Iron Works, Toronto, Ont., 1908.

BRITISH COLUMBIA.

'*Petrel*'—Steel construction; length over all, 93 feet 6 inches; beam over all, 17 feet; draught, 12 feet; compound engine $\frac{11-24}{16}$; Scotch marine boiler, pressure allowed, 160 lbs.; burns about 2 tons of coal per day of 9 hours.

Purchased from Victoria Machinery Depot Co., Victoria, 1906.

'*Point Grey*'—Steel construction; length over all, 100 feet; moulded beam, 22 feet; moulded depth 15 feet 2½ inches; fore and aft compound engines $\frac{17-40}{27}$; propeller 10 feet diameter; Scotch marine boiler 14 feet 2 inches diameter 12 feet 1½ inches long; working pressure 150 lbs.; built at North Vancouver B.C., 1912.

'*Point Ellice*'—Steel construction, length over all, 91 feet 6 inches; moulded beam, 20 feet; moulded depth 12 feet 9 inches; fore and aft compound engines $\frac{16-34}{24}$; propeller 8 feet 3 inches diameter; Scotch marine boiler 12 feet 2 inches diameter; 11 feet long; working pressure, 150 lbs.

Built at North Vancouver, B.C., 1912.

UNDER CONSTRUCTION.

ONTARIO AND QUEBEC.

No. 123.

Type dipper dredge, 3½ cubic yards capacity.
Length over all, 90 feet. Beam, 34 feet.
Depth over all, bow, 9 feet 6 inches.
Depth over all, stern, 8 feet 6 inches.

Constructed of wood; Scotch marine boiler, 8 feet 6 inches dimeter, 9 feet 10 inches long; working pressure, 125 lbs.; main engines, 12 inches x 14 inches.

Under construction at Government ship yard, Ottawa.

MARITIME PROVINCES.

No. 12.

Type: suction dredge, 15 inches pump.
Length, 110 feet. Breadth, 30 feet.
Depth moulded, 7 feet 8 inches. Triple expansion engine $\frac{8\frac{1}{4} \times 13\frac{1}{2} \times 22}{16}$

Scotch marine boiler, 10 feet diameter by 12 feet long, working pressure, 160 lbs.
Under construction at Phoenix Iron Works, St. John, N.B.

Tug.

Steel construction. Length over all, 80 feet.
Beam moulded, 20 feet. Depth moulded, 10 feet.
Draft aft, 7 feet.

Draught forward, 6 feet 6 inches. Fore and aft compound engines $\frac{12-26}{18}$

Propeller, 6 feet diameter, 8 feet pitch. Scotch marine boiler, 10 feet diameter, 11 feet long; working pressure, 145 lbs.
Under construction at Polson Iron Works, Toronto.

Rock crusher.

Length, 100 feet.
Beam moulded, 36 feet.
Depth, 8 feet.
Under construction at Lobnitz, Scotland.

DRY DOCKS.

The Dominion Government owns and operates three dry docks, viz.: the Lorne dry dock, at Lévis, Province of Quebec; the Kingston dry dock, at Kingston, Province of Ontario; and the Esquimalt dry dock, at Esquimalt, near the city of Victoria, in British Columbia.

LÉVIS DRY DOCK.

Lévis is situated on the north shore of the river St. Lawrence, opposite Quebec.

During the past fiscal year, the dock was kept in good condition by the regular staff, and 22 vessels were docked. The water supply system was improved, at a cost of $4,100.

The expenditure for staff and maintenance was $14,011.34, while the revenue, from all sources, was $23,758.02.

ESQUIMALT GRAVING DOCK.

Twenty-six ships were docked during the year for painting, repairs, &c., and the total revenue collected was $16,856.82.

The revised tariff does not appear to have attracted outside tonnage to a great extent, but local ships have had the advantage of a reduced rate for repairs, painting and exchanging propeller blades.

The staff was employed in docking ships, &c., and keeping the grounds and dock clean. The inside of the caisson was scaled and painted, and is in good working condition.

Several rooms were added to the dockmaster's office, making it a suitable residence for the dockmaster.

The total expenditure was, $15,138.80.

LOCKS AND DAMS.

RIVIÈRE DU LIÈVRE LOCK.

This lock is situated at Poupore, 12 miles above Buckingham, on the Lièvre river, in the County of Labelle.

Repairs and improvements to the locks and dam, and slide works, during the year 1911-12, included replacing the broken sheeting of dam, replanking the upper pier and replacing nearly all the floor stringer, which were rotten; work was done between March 11 and 30. Besides, some repairs to the lockmasters quarters, August 14 to 18, were made consisting in renewing part of foundation of house also some painting and repairing of shed.

YAMASKA LOCK.

The lock is situated at Ile à Cardin about 1¾ mile below the village of St. Michel d'Yamaska, in the County of Yamaska, where the Quebec, Montreal and Southern Railway crosses the river and where the Government built a wharf in 1909. The combined population of St. Michel d'Yamaska and Yamaska East is about 900, and the population of the county about 17,000.

The lock was built by the Government in 1884.

At the last session of Parliament, the sum of $3,900 was voted for the spring opening, maintenance and winter closing of the lock.

During the fiscal year 1911-12, the sum of $1,626.34 was expended.

CRAVEN DAM.

This dam is situated below the junction of the Qu'Apelle river and Last Mountain lake outlet, in the constituency of Regina. Between this dam, as mentioned above, and the junction of the Qu'Apelle river and outlet, there exists an old dam which was placed in position previous to the lower dam and which had fallen into disrepair and was no longer used.

Last June, there was trouble with the lower, or new dam, a breach having occurred underneath the sheet piling at the face of the work, necessitating considerable repairs, which were hard to effect, as the face of the dam was filled up largely with rock through which sheet piling could be driven with difficulty and which did not close the breach effectively. These repairs covered a period from the 8th to the end of June. Additional repair work was done in July and a small amount in August and September, making a total expenditure during the period covered by above dates of $887.08. This comprised all the repair work done to this dam until this spring, previous to the ice going out.

Upon examination in March, it was found that the condition of the new dam was such that it was not worth while, nor advisable, to try to repair it. Accordingly, temporary repairs were effected to the upper or older dam, which repair work consisted largely of strengthening same with rock and putting some small amount of sheet piling in, with a clay deck to keep the water back. It was also found necessary to place some mattresses of brush, loaded with rock, on the down-stream side of this dam, principally on the north bank, as the water had eroded a large hole in the bank, immediately adjoining the dam. It was necessary to close this in order to prevent further erosion and to divert the current into the stream where it belonged. The cost of these repairs executed in March amounted to $249.13.

Such repairs as have been effected are not intended to be more than temporary, as it is impossible to fix either of these dams to withstand the water for any length of time.

SLIDES AND BOOMS.

The Dominion Government owns and operates slides and boom works, built to facilitate the passage of square timber, round logs, flatted and dimension timber, &c., on the River Ottawa and tributaries; on the St. Maurice river; the Saguenay river, and at Fenelon Falls and Burleigh Falls on the Trent river.

In the subjoined reports, the superintending engineers of the river works, Messrs. G. P. Brophy, John Bourgeois and P. E. Amiot, give particulars relative to the construction, improvements and repairs carried out under their supervision on Government slides, booms, piers, dams, streams, buildings, &c., during the fiscal year; the expenditure incurred for staff, maintenance, improvements, &c.; the quantities of the various descriptions of timber that pass through their works, and other information of general interest and utility to lumbermen and the public at large.

REPORT ON THE OTTAWA RIVER WORKS.

(By G. P. Brophy, Superintending Engineer.)

OTTAWA, May 1, 1912.

The Chief Engineer,
Department of Public Works,
Ottawa.

SIR,—I have the honour to submit herewith, the following report on the works under my charge, for the fiscal year ended March 31, 1912.

OTTAWA RIVER WORKS—ORDINARY REPAIRS—STATIONS ON OTTAWA RIVER.

North Chaudière Station.—In the spring of 1911, and during the following summer, the bottom and side pier of upper slide were repaired from time to time. Last spring, about two-thirds of this slide had to be re-built in order to put it in shape for the present season's trade. A pier was constructed, filled with stone and sunk at the outlet, to replace the portions of the foundation carried away. The bottom of the new slide is of solid timber, 12 inches in thickness, resting on timber cross-sills.

On the north side, the wall is of solid crib-work for a distance of some thirty feet from the outlet, the remaining portion, as well as that on the south side, being of upright timber posts to which the sheeting is secured, the latter being two courses of hemlock plank, each three inches in thickness.

At the lower slide, a glance pier, 18 feet long and 6 feet feet wide, was built in eight feet of water. An apron was also provided at the outlet of this slide to prevent the logs and timber from being damaged, when the water in the Ottawa was at low pitch.

South Chaudière Station.—A new roof was placed on the blacksmith shop, the sides of the building being covered with rock elm siding and painted; the sheds and storehouses also received a coat of paint. The several buildings were generally repaired, during the year, to keep them in a state of efficiency. In the fall, the booms and aprons were laid away, and during the winter, ice was cut to protect them from being damaged.

Cheneaux Station.—At this station, the ends of the boom sticks were sawn off and new holes for the chains were bored farther up in the sound timber; the floating platforms were patched, while the chains and clevices connecting the sections of boom were examined and overhauled.

TRIBUTARIES OF THE OTTAWA RIVER.

Gatineau River.—The covering plank on forty-six lengths of the main boom, near the mouth of the Gatineau, were patched at several places, about ten thousand feet, B.M., of three-inch plank being used in doing so. The boom connections were repaired and renewed, cap pieces were placed on the booms and several of the snubbing posts, in the support piers, were renewed. The boats and scow were also repaired and painted.

Madawaska River.—At the mouth of the Madawaska river, certain small repairs were made to the retaining boom, some of the clevices being renewed.

At Arnprior station, the guide booms were patched and the bulkhead of the slide repaired.

At High Falls station, sheeting in the sides and bottom of the slide were repaired and a number of the support braces were renewed. A crab-frame was made for the bulkhead, the hoisting crabs being adjusted and reset. A new post was put in at the stop-log checks of the entrance bulkhead, on the corner of which was set an angle plate of three-eighth-inch by six-inch iron. The sides of the bulkhead were also patched where the planking was damaged.

At Ragged Chute station, about 275 cubic yards of stone filling were placed in the pier dam to make up the void caused by settlement.

At Chain Rapids station, the flat dam, at head of slide, was rebuilt. This structure is 148 feet long, 9 feet high and 16 feet on face. Sheeting of the main governing dam was also patched, and planking in the sides of the slide was renewed.

Coulonge River.—At High Falls station, the upper portion of one of the piers, supporting the guide boom, was rebuilt. This pier is 27 feet wide at one end and 19 feet at the other at the water line, 21 feet on either side and 12 feet high; the top being drawn in to 19 feet in width at each end and 15 feet at the sides. The face of the pier and one of the sides, exposed to wear, were covered with maple plank three inches in thickness. At a point about 200 feet from the outlet of the slide, a portion of the foundation crib-work was rebuilt for a length of 55 feet. Ten posts of 10 by 10-inch timber were put in to carry the superstructure. At another place, 700 feet above outlet, repairs of a similar nature were made, extending over a distance of 96 feet. The sheeting in sides and bottom of the slide was replaced at many places, and 53 posts, 15 cross-sills, 136 braces and 300 lineal feet of footboards were renewed. Three stay chains, attached to 1½-inch anchor bolts, were set to steady the slide; the crab-frame on the bulkhead was repaired, and several screw bolts were

placed in the guide booms. A leak in the dam, at head of slide, was stopped by brush, stone and gravel. The retaining boom at Coulonge village was lengthened by the addition of two sections, each 30 feet long.

Black River.—The glance pier at the foot of High Falls slide was repaired where the bed of the river had scoured. The foundations were undermined for a length of from 25 to 30 feet and to a depth of from 3 to 5 feet. A coffer dam was built to divert the water, the pier was underpinned and the deficiency was made up with cribwork and stone-filled. Stone was also placed along the face of the pier to prevent further scouring. A boom was hung from the front of the pier to protect the timbers, the upper end being firmly secured to a rock bolt. The sheeting, posts and sills of the slide were patched, and iron bars in the bottom were securely spiked.

Some of the timbers at the base of the long pier, at head of slide, were replaced where decayed. A snubbing pier, eight feet square, was built above the slide entrance to which the guide boom is attached.

Petewawa River.—At Second Chute station, the expenditure was incurred in hauling brush, gravel and stone, and depositing the same along the front of the main governing dam to the west of the slide, to prevent leakage and thus conserve the water for the proper working of the slide.

At Half Mile station, certain of the stringers of the flat dam were renewed; the ties were blocked up, and about 4,500 feet B.M. of 3-inch plank were laid on the face of the dam. At Notch, Little Thompson and Big Thompson stations, several rocks were blasted in the rapids, to improve the channel for the passage of timber and logs.

At Poplar Chute, several of the stringers and ties of the flat dam, on the south side of the river, were renewed, and the face was covered with six and eight-inch sheeting, taken out of the old slide works. This dam is 51 feet in length and extends from the head of the slide, northward, to the timber channel.

At Big Cave and Looking Glass stations, rock obstructions were removed from the rapids.

At Ragged Chute, two stringers and nine pieces of sheeting were made and placed in the flat dam.

At Big Gauthier and Little Gauthier stations, the work consisted in blasting rock obstructions.

At Big Camel Chute, the flat dam on the south side of the river was rebuilt; it is 82 feet long and 5 feet high, the face being hewed timbers 14 to 15 feet in length, about 50 cubic yards of rock were also removed from the chute.

At Little Camel and Mille Roches, the latter extending over a distance of $1\frac{1}{4}$ miles, a large quantity of rock was removed by blasting.

At McDonald's station, the sheeting in the bottom of the slide was patched; the glance pier at outlet of slide was repaired with new timbers where the face was gouged out by passing logs. A rock bolt was set at the head of the boom, on south side of slide, and two lengths of new boom were made. Two courses of timber were placed on a pier, twelve feet square, at the retaining boom above the slide.

Two pairs of oars with iron pins were provided for the use of the custodian of the retaining dam at Cedar lake.

Considerable difficulty was experienced in carrying on the blasting operations on the Petewawa, owing to the swift currents encountered and the inaccessibility of the rocks to be blasted; bridges or foot-paths having had to be built in most cases in order to reach the obstructions and provide a ready means of retreat for those engaged in the work. The presence of ice, in the rapids, was also another source of trouble; this formed quickly, owing to the severe weather, and the water was backed up to such an extent as to completely submerge the works, and dynamite had to be employed to remove the heaps of ice, before the work could be proceeded with.

The stations on the Upper Petewawa are so remote from railway communication that the execution of repairs in this district are quite costly, the supplies having to be portaged over rough country for distances of from twenty-five to thirty miles, in order to reach the different stations.

The water in the Ottawa river and its tributaries, in the spring of 1911, was about the average height, and very little damage to the works resulted. The water reached its maximum height about May 6, then it commenced to fall steadily, but was choked somewhat in the middle of June, owing to heavy rain falls. During the fall months, the water was exceedingly low and the late drives, especially those on the Petewawa river, were considerably hindered on this account.

The following statement, furnished by the Collector of Revenue, shows the volume of business for the fiscal year:—

Statement of the number of pieces of square timber, saw-logs, &c., that passed through the Government works on the Ottawa river and its tributaries, during the fiscal year ended March 31, 1912:—

	Pieces.
Saw logs	4,072,106
Boom and dimension timber	62,589
Cedars	29,901
Railroad ties	122,189
Fence posts	13,693
Telephone posts	11,802
	4,312,280

Also 68,400 cords of pulp wood.

The revenue accrued on the above was $34,202.88.

In submitting the foregoing,

I have the honour to be, sir,

Your obedient servant,

GEO. P. BROPHY,

Superintending Engineer, Ottawa River Works.

Statement showing Expenditure for Repairs to the Ottawa River Works, for Fiscal Year ended March 31, 1912.

Name of Work.	Province.	Electoral District.	Expenditure April 1 to Oct. 31, 1911.		Expenditure Nov. 1, 1911 to Mar. 31, 1912.		Expenditure April 1, 1911 to Mar. 31, 1912.	
			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ottawa River:—								
North Chaudiere Station	Quebec	District of Wright	501 38		833 04		1,334 42	
South " "	Ontario	City of Ottawa	274 25		244 84		519 09	
Cheneaux Station	"	South Riding County of Renfrew		775 63	159 75	1,237 63	159 75	2,013 26
Tributaries of Ottawa River:								
Gatineau River	Quebec	District of Wright			687 46		687 46	
Madawaska "	Ontario	South Riding County of Renfrew	94 69		769 12		863 81	
Coulonge "	Quebec	County of Pontiac	988 00		1,831 63		2.819 63	
Black "	"	" " "	204 00		311 00		515 00	
Petowawa "	Ontario	North Riding County of Renfrew and County of Nipissing	29 00	1,315 69	4,287 31	7,886 52	4,316 31	9,202 21
						Total		11,215 47

May, 1912.

JOS. KENT,
Accountant.

ST. MAURICE RIVER WORKS.

(By JOHN BOURGEOIS, Superintending Engineer.)

THREE RIVERS, May 11, 1912.

EUGÈNE D. LAFLEUR, Esq.,
Chief Engineer,
Department of Public Works,
Ottawa.

SIR,—I have the honour to submit the following report concerning the works executed in my district and under my supervision during the fiscal year ending March 31, 1912.

SECTION NO. I—MOUTH OF ST. MAURICE RIVER.

In the 'Eastern Channel,' down the highway bridge, three old piers have been demolished, up to low water mark, and the stone taken off from these piers has been laid over the St. Christophe island.

The pier 'B' has been rebuilt from low water line and measures 18 by 20 by 10 feet high. We have the necessary timber and stone for the construction of piers 'A' and 'C' and this work will be executed during the summer, when the equipment we are obliged to maintain in booms, will be out of work.

In the 'Middle Channel,' piers have also been demolished up to the level of low water mark, and rebuilt on the old foundations; they measure 22 by 24 by 13 feet high each.

The pier 'F' which measures 12 by 12 by 12 feet has been entirely ballasted with stones and planked with pine deals of 3 inches thickness.

The pier 'G' has been demolished up to the level of low water mark and has been rebuilt on the old foundations; the new pier measures 15 by 18 by 10 feet high.

At 300 and at 600 feet above the highway bridge, new piers which measure 30 by 26 by 3 feet high at base and 24 by 18 by 24 feet feet high have been constructed.

The sixth pier, above the Canadian Pacific Railway bridge, has been demolished to the level of low water mark and then rebuilt on the old foundations. This new pier measures 30 by 20 by 12 feet high; 6 toises of stone have been deposited around the foundations of the pier below.

All these works have been executed between January 1 and March 30, 1912.

In May, 1911, 660 feet of booms, measuring 5 feet wide, have been planked with pine deals of 3 inches thick. Also a piece of boom which measures 200 feet and which had been broken up at the time of the breaking up of the ice, has been hauled on shore and put in good condition.

SECTION NO. 2 'SHAWINIGAN BAY AND DES GRES.'

A new pier has been constructed at the 'Ile aux Tourtes.' This pier measures 40 by 30 by 6 feet at base and 32 by 22 by 26 feet high; it had been built during the months of January, February and March, 1912, and takes the place of the one which had been thrown down by the pressure of water at the time of the swelling of St. Maurice river, during the spring of 1910.

In the course of the month of July, 1911, 300 feet of booms which measure 6 feet wide have been covered with pine deals of 3 inches thick.

SECTION NO. 3 'SHAWINIGAN FALLS.'

1. At 'La Pointe à Bernard,' pier No. 14 which measures 30 by 12 feet has been raised by 5 feet and planked with pine deals of 3 inches thick.

2. Between the islands Marchesseault and Langevin, a pier has been entirely rebuilt to replace the one that had been demolished by the ice about seven years ago. This new construction measures 35 by 35 by 4 feet at base and 25 by 25 by 12 high. This pier later on, when the sinking will be made, will have to be raised up by 12 feet.

3. At 'Les-Hétres' the piers Nos. 1, 2 and 4, on the west side of St. Maurice river, have been each raised up by 5 feet; they measure 28 by 28 feet and are planked with pine deals of 3 inches thick.

4. The pier No. 2, on the east side of the river, has been rebuilt and measures 40 by 40 by 4 feet at base and 30 by 30 by 15 feet high; later on, after the sinking will be completed we will have to add 12 feet to this pier in order to give it the necessary height.

5. At 'Shawinigan Falls,' a part of the slide, measuring 96 feet long, has been demolished and replaced by a construction of steel, divided in four sections of 24 feet each, and on the rest of the slide, in wood, which was in very bad condition, considerable repairs have been made.

All these works have been executed in the course of the months of January, February and March, 1912.

In the course of the summer 1911, 1,200 feet of booms, in British Columbia fir, measuring 4 feet wide by 16 inches thick have been constructed. Moreover, 250 feet of booms 6 feet wide, 360 feet of 5 feet wide, 588 of 4 feet wide and 125 feet of 3 feet wide have been covered with pine deals of 3 inches thick.

SECTION NO. 4 'PETITES PILES.'

At pier No. 5, of that section, which measures 25 feet square, the upper part has been demolished and rebuilt on 8 feet in height. The construction of a protection wharf at the head of 'Island Arthur' has been undertaken during the month of July last. The work was stopped in the autumn and continued, then the timber part was finished in the course of winter of 1912. About 40 toises of stones will be required to complete the ballasting. This wharf measures 127 feet long by 15 feet high and 30 feet wide at base.

The intended pier at the head of 'Petites Piles' rapids, which would give more strength to the booms which cross the river at this place, has not been constructed on account of the too considerable depth of water. During the month of April, 1911, 654 feet of booms of 3 feet wide by 12 inches thick, in spruce, have been constructed. During the month of May, 1,700 feet of booms of 12 inches square have been constructed and placed temporarily at the head of 'Leblond Island'; this timber has been used later on for the construction of wharf at 'Arthur Island.'

SECTION NO. 5—GRANDES PILES.

The upper part of pier No. 2 at St. Jacques des Piles has been demolished up to the level of low water mark and then rebuilt entirely. It measures 30 by 25 by 15 feet high and has been planked with pine deals of 3 inches thick.

At 'Pointe Madeleine,' the pier No. 2, which had been demolished in 1910, to the level of low water mark, has been rebuilt and planked in pine deals of 3 inches thick; it measures actually 30 by 25 by 12 feet high.

Pier No. 3, the foundations of this pier had been made thus: 40 by 45 by 4 feet and 30 by 35 by 5 feet high.

All these works have been executed in January, February and March, 1912.

In April and May, 1911, 480 feet of booms have been constructed and they measure 4½ feet wide and have been planked with pine deals of 3 inches thick.

The *Alligators Nos. 1* and *2*, on service at the sections of Shawinigan, Petites and Grand'Piles have been entirely rebuilt and the side wheels replaced by twin screws.

This work has been done at the construction camp at Pointe Madeleine.

During the summer of 1911, the level of the St. Maurice river was very low, which rendered the floating of logs difficult and the consequence of this was, that between La Tuque and Three Rivers there has been about two hundred and fifty thousand of logs stranded on the shores and sand-banks of the river.

I have the honour to be, sir,

Your obedient servant,

JOHN BOURGEOIS,

District Engineer.

REPORT ON THE SAGUENAY RIVER WORKS.

(By P. E. Amiot, Superintending Engineer.)

The Saguenay booms are situated on the Saguenay river, about 6 miles above Chicoutimi.

The amount expended, for maintenance, repairs, rent of land, stretching, wintering, maintenance of alligator tug *Saguenay No. 102* is $6,645.94.

All the usual works in connection with the maintenance of the booms was executed, they were placed last spring after having received the necessary repairs, they were opened and closed when required by the lumber companies, and, last fall, they were placed in winter quarters.

The boom is under the care of Mr. Wm. Dallaire whose services are required the year long.

GAPS FOR SAGUENAY BOOM.

The gaps for the Saguenay boom were built to accommodate the several companies who drive timber in that river, that are: The Chicoutimi Pulp Co., Price Bros., Les Bucherons du Saguenay. We have built these gaps, one for each company. In past years, the companies complained that the timber was not delivered fast enough, but with the new gaps, each company will attach the bag-boom to their own gaps, and save a considerable lot of time.

We were authorized to spend $3,000 to build the first section, which consist of two piers: The foundation is 70 feet in length by 30 feet in width, it is built up to two feet from low water spring tide, then two piers are built on the foundation ten feet apart with the front part as ice-breaker; the piers having the following dimensions: On top, 20 feet in width by 20 feet in length, and at the bottom 30 feet in width by 20 feet in length, with three gaps, ten feet in width, these gaps shall be closed with neddle 10 by 10-inch, which timbers are lifted with a hand winch. The total height of the piers is 25 feet.

Work started February 19. Discontinued March 31.

It will take $1,000 to complete the shore section.

I have the honour to be, sir,

Your obedient servant,

P. E. AMIOT.

GOOSE ISLAND ENCAMPMENT.

Goose Island Encampment is situated on the North Saskatchewan river, approximately 75 miles south-west of Edmonton by road, and approximately 125 miles up the river by water.

The nearest railway stations are Stoney Plain on the Canadian Northern Railway, about 50 miles, and Wabamun on the Grand Trunk Pacific, about 24 miles. Summer traffic, however, always goes to Stoney Plain owing to the difficulties of the Wabamun trail.

No village exists at Goose Island, the country being sparsely settled with homesteaders. The nearest post office is Burtonsville, 1½ miles west of the head of the island.

On request or application of the lumbering interests of the North Saskatchewan river, the Department of Public Works undertook to construct works for the purpose of retaining the logs during high water season, by means of a pocket in the smaller channel north of Goose Island. In the past, many logs have been lost in the flood season.

Surveys for this work were made in 1909, and the work was started in the month of November.

The general plan of the work to be done consisted of a pile dam 293 feet long, and about 18 feet high, across the north channel, near the foot of the island. This dam was for the purpose of forming a dead water pool in which the logs might be stored, and passed down the river through sluice gates, as required. The dam was to be further protected by two piers built directly above it.

The head of the channel is divided into two by a small island. One of these divisions was to be blocked by a row of close piling, called a "Moose Fence", 472 feet long. The logs were to be directed to the other division of this channel by shear booms attached to four piers placed at intervals above its head, and further guided down channel by a boom maintained against a row of piling some 1,500 feet long.

As the work was nearing completion, on May 27, 1910, a flood carried away 119 feet of the dam and scoured the shores considerably in the vicinity of the pile fence. The work was protected as much as possible, but on April 21, 1911, an ice freshet destroyed all of the piers and the greater part of the pile fence, also scouring the bank very badly in the vicinity of the head of the log channel.

During the fiscal year 1911-12, it has been necessary to employ a watchman to guard the Government property remaining at Goose Island. Some small accounts remaining unpaid since active construction was closed, have also been settled.

BRIDGES AND ROADS.

It may be stated that, in the older provinces of the Dominion, the Federal Government has confined itself, as a rule, to take under its exclusive control and make provisions towards the construction and maintenance of important interprovincial road bridges and bridges required across waterways.

In the sparsely settled districts of the Northwest Territories, the Government of Canada has undertaken to provide for the erection and maintenance of ordinary road bridges over large streams; bridges that are urgently needed to afford uninterrupted communication through trails and highways of national importance, which neither the municipalities to be more immediately benefited by the structures nor the territorial authorities most directly concerned, could be expected to erect and maintain at their sole expense.

During the last fiscal year, works have been executed on the following:—

ONTARIO AND QUEBEC.

BRIDGES AT OTTAWA, AND ROADWAY AND BRIDGE APPROACHES BETWEEN OTTAWA AND HULL.

Ordinary Repairs.

Chaudiere Slide Bridge.—The roadway of this bridge was cleaned frequently, and the gratings and weeper holes were kept free from obstructions. The ice surrounding the posts supporting the bridge was cut so that damage would not result by jamming against the ironwork, as the water rose and fell in the channels leading to the hydraulic lots.

Union Bridge.—The roadway of this bridge was cleaned and patched, and the sidewalk was repaired.

Hull Slide Bridge.—This bridge was cleaned from time to time as required.

ROADWAY AND BRIDGE APPROACHES BETWEEN OTTAWA AND HULL.

This thoroughfare was also cleaned regularly, the guard rails were repaired, the sidewalks were patched and the paving blocks were taken up, where settlement had taken place, and re-laid to grade.

In the winter time, surplus accumulations of ice and snow were removed from the different bridges and causeway leading to Hull, and sand was spread on the walks, when in slippery condition, for the safety of pedestrians.

STATEMENT showing Expenditure for Repairs to Bridges for Fiscal year ended March 31, 1912.

Name of Work.	Province.	Electoral District.	Expenditure April 1, to October 31, 1911.		Expenditure November 1, 1911 to March 31, 1912.		Expenditure April 1, 1911 to March 31, 1912.	
			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Bridges at Ottawa, and Roadway and Bridge Approaches between Ottawa and Hull.—								
Chaudiere Slide Bridge	Ontario	City of Ottawa	127 12		129 88		257 00	
Union Bridge	Ont. & Que.	City of Ottawa and Dist. of Wright	399 38		317 55		716 93	
Hull Slide Bridge	Quebec	District of Wright	12 25				12 25	
Roadway and Bridge Approaches between Ottawa and Hull	Ont. & Que.	City of Ottawa and District of Wright.	440 38		358 00		798 38	
				979 13		805 43		1,784 56
Total for Ottawa Bridges								1,784 56
Bryson Bridge	Quebec	County of Pontiac				1,126 50		1,126 50
Portage-du-Fort Bridge	Ont. & Que.	South Rid., Renfrew & Co. of Pontiac				1,062 00		1,062 00
Total for All Bridges								3,973 00

May 1, 1912.

JOSEPH KENT,
Accountant.

BRYSON.

Bryson, population 1,400, in the County of Pontiac, is located on the north shore of the Ottawa. At this place, there is a bridge that spans the Culbute channel on the Ottawa river.

The total length of the bridge is about 525 feet, there being two truss spans of 210 and 170 feet respectively, also two girder spans, the Calumet island one being 50 feet in length and that at the other end double that length.

The iron work was thoroughly cleaned by the sand blast process and afterwards received two coats of black Esco paint. The work was in progress at the end of the period covered by this report, and has since been completed.

Extensive repairs to the Bryson-Calumet bridge floor were authorized June 24, 1911.

Repairs and improvements, July 4 to 27, consisted in patching holes in the old flooring of bridge and putting in an additional flooring on top of the old one. The wheel-guards on sides of bridge were repaired, raised and put on 3-inch blocks, and additional wheel-guard in centre of bridge to give wear to both sides of flooring.

CHAPEAU.

The village of Chapeau, on Allumettes island, Pontiac county, is connected to the mainland by a wooden bridge, built in the early '60's, across the Culbute channel of the Ottawa river.

During the fiscal year 1910-11, the substructure for a new steel bridge was built by Fallon Brothers. The inspection extended into the months of April and May and minor finishing work of piers, &c.

During the past year, the old wooden bridge was repaired to withstand the traffic, at a cost of $301.93. In October, 1911, it was necessary to repair the base of pier '4' with concrete, and rip-rap north approach, which had suffered by scouring, &c.

Contract plans and specifications were prepared for the superstructure of 7 80-foot pony trusses of Warren type, and concrete floor for 16-foot clear roadway, 572 feet 9 inches long, with expansion joints over each end bearing, reinforced and anchored to take care of wind stresses in lieu of usual lower lateral bracing. The contract for this work, $25,000, was awarded to the Cleveland Bridge & Engineering Company, who commenced erecting the steel work in March.

FORT FRANCES.

Bridge over Canal.

An examination was made of the site of a proposed bridge across the channel, excavated for a canal about 1874, at Fort Frances, on an application of the International Bridge and Terminal Company. The proposed plan calls for a 70-foot span, and it was recommended that it be accepted provided that the rights to enlarge the canal at a future time be protected. The bridge is now under construction.

GRAND RIVER BRIDGE.

Grand River bridge is a highway bridge connecting the east and west banks of the Grand river, at the village of York, in the County of Haldimand. It is 5 miles from Caledonia, the nearest railway station. This bridge was constructed by the Dominion Government in 1891.

On June 12, 1911, authority was received to expend the sum of $100, in the performance of urgent repairs required.

The work was performed between the 1st and 16th of March, 1912, and consisted of general repairs to hand railing of approach; renewal of corbels on said approach, and other general repairs. This structure requires considerable attention, which will be given during the coming season.

HAWKESBURY.

Hawkesbury (population, 4,391), County of Prescott, is situated on the Ottawa river, half way between Montreal and Ottawa.

At its last session, Parliament granted $50,000 for the construction of an Interprovincial bridge at Hawkesbury.

To date, certain preliminary work has been done in connection with this bridge. Comparative estimates and plans have been prepared following test borings and examination of several bridge sites. The required right-of-way for the south approach to proposed bridge and valuation of same were made, and expropriation proceedings have been taken.

MATAPEDIA.

Matapedia, in Bonaventure county, is situated at the junction of the Matapedia and Restigouche rivers, 15 miles west of Campbellton.

This place is an important station of the Intercolonial railway, the starting point of the Quebec Oriental railway and the headquarters of the Restigouche Salmon Fishing Club.

An Interprovincial highway bridge, situated on the Restigouche river, at the mouth of the Matapedia river and connecting the Counties of Bonaventure, P.Q., with Restigouche, N.B., was built during the year 1909-10.

Still, the approaches which were 1,381 feet long by 40 feet wide, on Quebec side, and 268 feet in length by 20 feet in width, on New Brunswick side, were only built in the following year, 1910-11.

During the fiscal year 1911-12, the approach on New Brunswick side was completed, and waling guard, on Quebec side, was commenced but not completed.

PORTAGE DU FORT.

This is an International bridge, and spans the Ottawa river at the village of Portage du Fort, Que., connecting this place with the Province of Ontario.

The bridge across the main channel is 395 feet in length, and the smaller one, across the channel at the village, is 203 feet.

Both these bridges were cleaned by the sand blast process and covered with two coats of Esco paint, in a manner similar to the Bryson bridge. The work was not completed at the end of the past fiscal year but was finished in April last.

MANITOBA.

ASSINIBOINE RIVER.

Midland Railway Bridge.

A plan for a temporary wooden bridge across the Assiniboine river at Winnipeg was submitted by the Midland Railway Company. The proposed plan shows the swing spans to be 240 feet over all with openings of 90 feet on each side of the first pier. The site of the bridge is a short distance below the Canadian Pacific Railway bridge. The plan was approved and the bridge built accordingly.

BRANDON.

C.P.R. Bridge.

An examination was made of the Canadian Pacific Railway bridge that crosses the Assiniboine river at Brandon, as the company had applied for permission to double track their bridge by building a deck plate guide bridge alongside the present structure, maintaining the same spans by extending the piers and abutments. The spans consisting of two 69-foot spans, and two 115-foot 6-inch spans, centre to centre. These spans are satisfactory but as they will be fixed, the company should be required to give a bond that should the Department require them to put in a swing or bascule lift-span they will do so. The present bridge is arranged for a swingspan but has not been operated.

WINNIPEG.

Osborne St. Bridge.

An examination was made July 28, for the site of a new bridge across the Assiniboine river, to be built by the city of Winnipeg to replace the present structure at Osborne street. The proposed plans show two bascule lift-spans, giving a clear opening of 100 feet 5 inches on two spans of 101 feet 5 inches and one span of 83 feet, all centre to centre. The bridge will be a deck plate guide. The spans are satisfactory.

WINNIPEG.

C.P.R. Bridge.

An examination for the widening of the Canadian Pacific Railway bridge across the Red river at Winnipeg was made March 5. The bridge consists of 4 spans of 127 feet 9 inches each, and swing-span of 114 feet 1 inch clear on each side of the first pier. The foundation of the present piers and abutments are now being widened for the new structure.

WINNIPEG RIVER (KEEWATIN BRIDGE).

An examination was made of the highway swing-bridge at Keewatin. The bridge crosses the river obliquely and the total length of the bridge is 84 feet, the arm over the water being 55 feet long, the actual span though is only 44·8 feet, which is still reduced, by a ledge projecting from the shore, to a space of 29 feet. It was suggested to remedy this that the ledge should be blown off and a fender placed against the rock to protect passing vessels.

SASKATCHEWAN AND ALBERTA. ..

EDMONTON BRIDGE.

The Edmonton bridge crosses the North Saskatchewan river, between Edmonton and South Edmonton, formerly Strathcona. It is 700 feet long between abutments, consisting of four 175-foot spans with a roadway 17 feet wide and two sidewalks 71 feet each. The bridge is constructed of steel, with Pratt trusses, of 7 25-foot panels each. The approximate dead load per lineal foot is 2,420 pounds, including an allowance of 600 pounds per lineal foot for snow load.

The piers are of concrete, approximately 43 feet high above the river bed. These are based on concrete foundations, deposited in caissons and, in one at least, piles were driven before the concrete was deposited.

The bridge was constructed in the year 1899. In 1901, an indenture was drawn up by which the Edmonton, Yukon and Pacific Railway Company was allowed to place tracks on the bridge and to run their trains across, subject to certain responsibility regarding accidents, improvements, &c.

In November, 1908, an agreement was drawn up whereby the Edmonton Radial Electric railway, belonging to the city of Edmonton, was allowed to place rails on the bridge, and a street car service was inaugurated across the bridge between Edmonton and South Edmonton (Strathcona). This agreement was also subject to certain conditions whereby the Edmonton Radial Electric Railway Company assumed responsibility in regard to the direction of traffic and the upkeep of the bridge.

In September, 1910, one compression member, near the Edmonton end of the bridge, was seriously damaged by a derailed freight car. Temporary repairs were made at once by the Canadian Northern Railway Company, and in March, 1911, the damaged member was replaced by a new one. The work was done by the Edmonton Iron Works under contract to the Canadian Northern Railway Company.

At the beginning of the fiscal year 1911-12, instructions were issued by the Department that the cost of all repairs to the bridge should be divided equally between the Edmonton Radial Electric Railway Company, the Canadian Northern Railway Company, operating under the charter of the Edmonton, Yukon and Pacific Railway Company and the Department of Public Works. Later on, an offer made by the city of Edmonton to do all work in connection with the repairs was accepted, expense of same to be divided as above.

During the year, the portion paid by the Department as their third of costs of repairs has amounted to $341.95. The bridge has been refloored once and the floor repaired several times.

BOW RIVER AND SPRAY RIVER BRIDGES.

The flooring and joists of the Bow River bridge at Banff were in a bad state of repair. They had been in position for a great many years and needed replacing with new work. The flooring needed attention most urgently and at the time the work was done the amount available was only five-twelfths of the total appropriation so that the cost of joists and flooring together would have greatly exceeded the amount then available.

This bridge crossed the Bow river at Banff, in the Rocky Mountain Park, and consists of a steel truss of four spans each, approximately 90 feet long, with a 6-foot sidewalk on the west side of the bridge. The road has a width of 16 feet.

This work was done during the month of July, 1911, the total expenditure incurred being $553.83. The flooring was only placed on the roadway of the bridge, as the sidewalk did not need particular attention at that time. This flooring consisted of 3-inch B.C. fir, of which there was 18,064 feet b.m., making the total bill for lumber $451.60. The labour of placing the floor amounted to $97.56. Cost of machine bolts, $4.67.

BRIDGES GENERALLY.

The Grand Trunk Pacific Railway bridge across the Athabaska river, in township 47, range 1, west of the 6th meridian, Alberta, has been constructed in accordance with the plans submitted to the Department for approval. The bridge is completed and open for traffic.

The Grand Trunk Pacific Railway bridge across the McLeod river at mileage 5·9 on the Alberta Coal branch, has beeen constructed in accordance with the plans submitted to the Department and approved by an order in council, on April 24, 1911; the bridge is completed and open for traffic.

The bridge to be constructed by the Canadian Pacific Railway Company, across the North Saskatchewan river at Edmonton is being constructed in accordance with the plans approved by an order in council, on September 16, 1910. The concrete abutments, piers and pedestals are completed and the superstructure started.

CEMENT LABORATORY.

July 30, 1912.

E. D. LAFLEUR, Esq.,
Chief Engineer,
Public Works Department.

SIR,—I have the honour to transmit herewith the annual report of the Dominion testing laboratory for the year ended March 31, 1912.

During the last twelve months, two thousand nine hundred and twenty (2,920) samples were submitted to this laboratory for test purposes, which number shows an increase of 560 samples over the same period last year.

During the year, 17,520 briquettes, 160 chemical analysis, 730 specific gravity and 56 other tests were made.

The following table shows the increase in work and samples received in the laboratory in the last eight years:—

Year.	Samples Received.	Briquettes Made.	Increase over 1904.
1904	237	1,422	
1905	756	4,536	219%
1906	835	5,010	253%
1907	1,246	7,476	426%
1908	1,454	8,724	514%
1909	1,481	8,886	525%
1910	2,360	14,160	896%
1911	2,920	17,520	1,133%

Of the 2,920 samples received and tested, 2,810 were accepted and 110 rejected. The 110 samples condemned were of the following brands:—

International	36	samples	representing	1,440 bags.
White Bros.	9	"	"	360 "
Sun	9	"	"	360 "
Sterling	9	"	"	360 "
Belleville	9	"	"	360 "
Monarch	9	"	"	360 "
Unmarked	17	"	"	680 "
Sand	10	"		
Gravel	2	"		

The samples received were from the following:—

Engineers of the Public Works Department	2,845
Architects " " "	38
Cement manufacturers	32
Contractors	2
Marine and Fisheries Department	2
Geological Survey Branch	1

The following table shows the number of samples received of the different brands:

Star	1,086
International	933
Canada	394
Samson	121
Colonial	63
Belleville	58
Vulcan	46
Crown	40
White Bros.	39
Unmarked	36
Sterling	18
Monarch	18
Lehigh	11
National	11
Sun	9
Gravel	17
Sand	10
Coal	6
Limestone	2
Rock	2

With the vast increase of work it was found necessary to employ another physical tester, which started to work on March 22, 1911.

This laboratory is maintained almost exclusively for the purpose of making tests of materials delivered under Government specifications, for the purpose of determining whether they meet the standard of the quality prescribed. The work accomplished during the year shows an increase of more than 23 per cent over the previous year, this increase is due to the increased use of cement on the different Government works and to the increased demands of the various Government engineers for its services, and is a strong argument in favour of the necessity for such a laboratory, and also for the extension of it.

As mentioned in the last report, lack of funds and space has prevented the inauguration of any new work, the work accomplished has consisted in the testing of cement generally and a few pieces of structural materials.

In view of the fact that this laboratory could do so much good to the building profession by being equipped properly to handle all tests of all building materials, it is urgent that the Government supply this laboratory with larger quarters and vote a certain sum of money (of say $15,000 to $25,000) every year for its maintenance and investigations.

Last year, the Department put in the estimates an appropriation of $47,000, $22,000 for machinery and $20,000 for new building and $5,000 for investigations. It is to be hoped that the Cabinet will co-operate and put this through at the first opportunity, thus insuring the best that is to be had for use in the work of the country.

I have the honour to be, sir,

Yours obediently,

GEO. E. PERLEY,

Director

CONCLUSION.

After perusal and examination of the reports submitted by the different engineers and other officers of this branch of the service, under by control, I cannot refrain from expressing my cordial commendation for the able manner in which the many works are being projected, executed and completed.

Of the $8,558,867.39 which has been expended during the year, I am not aware of a single failure or disaster which could be charged to the negligence or inefficiency of my staff.

It affords me great pleasure to extend my sincere thanks to all my assistants, including those at headquarters, for their untiring energy and ability in so satisfactorily performing the duties entrusted to them.

Sincerely,

EUGENE D. LAFLEUR,

Chief Engineer.

PART V

REPORT ON GOVERNMENT TELEGRAPH LINES

FOR THE

FISCAL YEAR ENDED MARCH 31, 1912.

DEPARTMENT OF PUBLIC WORKS,
OFFICE OF THE GENERAL SUPERINTENDENT,
OTTAWA, ONT., August 8, 1912.

R. C. DESROCHERS, Esq.,
Secretary, Department of Public Works.

SIR,—I beg to submit herewith my report on the Government Telegraph Service for the fiscal year ended March 31, 1912.

This report, as usual, is prefaced by a list to the present date of the land lines and cables in operation; with data of lengths, year of construction, number of offices at present established, and an estimate of the traffic handled in each instance.

The usual tabular statements giving list of offices, operating staff, &c., in the several districts are appended to the report; likewise the tariff sheets, showing the rates charged for messages on the several lines.

I have the honour to be, sir,
Your obedient servant,

D. H. KEELEY,
General Superintendent.

THE GOVERNMENT TELEGRAPH SERVICE
DOMINION OF CANADA

HEAD OFFICE: DEPARTMENT OF PUBLIC WORKS, OTTAWA.

(July 1, 1912.)

EXECUTIVE.

The Hon. F. D. Monk, K.C., Minister of Public Works.
J. B. Hunter, Esq., Deputy Minister of Public Works.

STAFF AT HEADQUARTERS.

D. H. Keeley, General Superintendent.
M. W. Crean, Technical Assistant to Superintendent.
J. E. Gobeil, Technical Assistant to Superintendent.
Miss A. Hardcastle, Secretary to General Superintendent.
Miss E. D. McCloskey, Assistant Secretary to General Superintendent.
P. G. Burgess, Accountant, Telegraph Branch.
J. E. Bray, Assistant Accountant, Telegraph Branch.

GENERAL INSPECTORS.

A. B. McDonald, North Sydney, Cape Breton, lines in Nova Scotia and New Brunswick.
J. S. Macdonald, Edmonton, Alta., lines in Northwest and British Columbia south.

SUPERINTENDENCIES.

Edwin Pope, Quebec, dist. supt., North Shore and G.N.W. traffic.
J. C. Taché, dist. supt., Chicoutimi district and North Shore to Bersimis.
E. H. Tetu, Long Point of Mingan, dist. supt., North Shore, East Bersimis.
P. Pouliot, dist. supt., Quarantine line, &c., to Grosse Isle.
A. Malouin, dist. supt., West Point, Anticosti Island.
A. Le Bourdais, Grindstone, dist. supt., Magdalen Islands.
D. C. Dawson, St. John, N.B., dist. supt., Cape Breton system.
Mrs. C. C. Seely, Grand Manan, N.B., dist. supt., Bay of Fundy system
J. McR. Selkirk, Leamington, Ont., dist. supt., Pelee Island system.
Robt. C. Macdonald, Edmonton, Alta., dist. supt., Northwest Territories.
Wm. Henderson, Victoria, dist. supt., British Columbia, south.
L. A. Palmer, Summerland, B.C., supt., Penticton line.
J. T. Phelan, Vancouver, B.C., supt., Yukon system.
H. Gilchen, Whitehorse, Y.T., dist. supt., Atlin-Boundary.

GOVERNMENT TELEGRAPH SERVICE.

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Offices.	Messages Sent.
			Land Lines. Miles Wire.	Cables. Kt's.	Total.		
Newfoundland..	Port au Basque—Cape Ray	1883	14		14	2	
Nova Scotia	North Sydney—Meat Cove (with loops)	1880-02	165½	....			
" ..	Across Bras d'Or channel	1880	.....	½			
" ..	" St. Anns Harbour	1887	.....	¼	167	23	
" ..	" Ingonish Harbour	1887	.....	¼			
" ..	French River		.....	¼			
" ..	Englishtown		.....	¼			
" ..	Big Bras d'Or—Kempt Head	1904	20	.....	20	3	
" ..	Meat Cove—St. Pauls Island	1890	...	20	23	1	
" ..	On St. Pauls Island	1890	3	.....			
" ..	Bay St. Lawrence to Money Point	1907	8	.....	8	4	
" ..	Mabou—Meat Cove	1887-00	109	.....	109	12	
" ..	Barrington—Cape Sable	1883	16	.....			
" ..	Across Bear Point Channel	1883	...	1½	17¾	Leased.	
" ..	" Lt. House Channel	1883	...	¼			
" ..	Mabou—Port Hawkesbury	1903	41¾	....	73¾	7	
" ..	Port Hawkesbury—St. Peters	1903	32	.....			
" ..	St. Peters—Main-a-Dieu	1904	84¼	....			
" ..	Main-a-Dieu—Scatari	1902-09	1	3½	131½	14	
" ..	On Scatari Island	1904	7¼	.....			
" ..	Gabarous—North Sydney	1904	35½	....			
" ..	Little Bras d'Or—Kempt Head	1905	36	.....	36	6	16,742
" ..	North Sydney—Eskasoni	1905	37	.....	37	16	
" ..	Castle Bay—Grand Narrows	1908	16	.....	16		
" ..	Grand Narrows—Shenacadie	1910	8	...	8		
" ..	Leitches Creek—Steeles Crossing (loop)	1910	28	....	28		
" ..	Baddeck—Little Narrows	1910	19½		19½		
" ..	North Sydney—Little Bras d'Or (second wire)	1906	6	.....	6		
" ..	Grand River—Enon	1907	19½	.....	19½	2	
" ..	Enon—Gabarous	1909	31	.....	31	2	
" ..	Strathlorne—Wycocomagh	1909	32¼	....	32¼	5	
	Port Hood, Island Branch:						
	(Length of constuction in loop.)						
" ..	On mainland at Port Hood	1907	½	....			
" ..	Port Hood—Smith Island	1907	.....	2			
" ..	On Smiths or Inner Island	1907	4	....	13½	4	
" ..	Smiths Island to Henry Island	1907	.....	3			
" ..	On Henry or Outer Island	1907	4	....			
New Brunswick.	Chatham—Escuminac	1885	42¼	....	42¼	6	967
	Bay of Fundy System:						
" ..	Eastport—Campobello	1880	.....	1¾			
" ..	On mainland Eastport	1880	½	.....			
" ..	On Campobello Island	1880	7½	.....			
" ..	Campobello-Grand Manan	1880	.....	7¼			
" ..	On Grand Manan Island	1880	25¼	.....	44¼	12	1,553
" ..	Grand Harbour—Cheneys Island	1890	.. ..	½			
" ..	On Cheneys Island	1890	¾	....			
" ..	Cheneys Island—Whitehead Island	1890	.....	¾			
" ..	Partridge Island—Fort Dufferin	1900	.....	¾			
	Carried forward	.....	855¼	42¾	898	113	19,262

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GOVERNMENT TELEGRAPH SERVICE—*Continued.*

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Offices.	Messages Sent.
			Land Lines.	Cables.	Total.		
			Miles Wire	Kt's.			
	Brought forward		855¼	42¾	898	113	19,262
	Gannet Rock Branch:						
New Brunswick.	Seal Cove—Big Wood Island	1910	¼	1½	11¼	3	†
"	On Big Wood Island	1910	1½				
"	Big Wood Id.—Little Wood Id	1910		½			
"	On Little Wood Island	1910	¼				
"	Little Wood Island—Gannet Rock	1910		7¼			
	Magdalen Island System:						
"	Meat Cove, C.B.—Magdalen Islands	1880		55	184¾	18	2,902
"	On Magdalen Island	1881–02	83½	½			
"	Grosse Isle - Brion Island	1902		11			
"	On Brion Island to Dingwalls	1902	1				
"	On Brion Dingwalls to Lt. House	1909	5				
"	House Harbour—Pointe Basse (loop wire)	1902	8				
"	Pointe Basse—South Beach (loop wire)	1905	6				
"	Grindstone—Barachois (loop wire)	1909	6				
"	Amherst Island—Entry Island	1910	2	6¾			
	Anticosti System:						
"	Gaspé—L'Anse à Fougere	1881	28		316½	9	3,203
"	L'Anse à Fougere—Anticosti	1881		44¼			
"	On Anticosti Island	1881–90	223¼				
"	Anticosti—Long Point Mingan	1890		21			
	Chicoutimi Dist.:						
"	Bay St. Paul—Chicoutimi	1881–04	98		98	5	
"	St. Alexis—St. Catherines Bay	1904	78		78	5	
"	Murray Bay—St. Agnes	1904	14½		14½	2	
"	Bay St. Paul—Petite River	1904	13		13	1	
"	Chicoutimi—St. Charles	1903	37		61	10	
"	St. Anne—Lac Claire	1903	15				
"	St. Anne—St. Fulgence	1903	9				
"	St. Fulgence—Sacre Cœur	1905	57½		57½	4	
"	Murray Bay—St. Catherines Bay (2 wire)	1904	44¾		44¾		
"	St. Alexis—Chicoutimi (2nd wire)	1905	14½		14½		
"	St. Charles—St. Henri de Taillon	1907	24½		24½	4	
"	St. Henri de Taillon—Peribonka	1908	17		17	2	35,721
"	Bay St. Paul—St. Placide	1908	8½		8½	1	
	North Shore Line:						
"	Murray Bay—Chateau Bay (Tadousac)	1881-01	1,028½		1,030¾	69	
"	Across Saguenay River at Tadousac	1883		1¼			
"	" " " "	1909		1			
"	Chateau Bay—Belle Isle*	1901					
"	Bersimis—Godbout	1904–05	104		104		
"	St. Simeon to Cap Salmon Lt. (loop wire)	1909	4		4	1	
"	Harrington—Harrington Island	1909	1¼	3¼	4½	1	
	Carried forward		2,789	196	2,985	248	61,088

* This cable (Chateau-Bay—Belle Isle) 22¼ knots, was withdrawn in 1909.
†Included in Bay of Fundy System.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Offices.	Messages Sent.
			Land Lines.	Cables	Total.		
			Miles Wire	Kt's.			
	Brought forward		2,789	196	2,985	248	61,088
	Quarantine System:						
Quebec	Quebec—L'Ange Gardien	1885	13				
"	L'Ange Gardien—Orleans Island	1885		¾			
"	" 3 lengths	1906–09		2¼			
"	On Orleans Island	1885	29¼				
"	Orleans Island—Isle Reaux	1889		2			
"	" " (2nd cable)	1910		2¼			
"	On Isle Reaux	1889	2½		80¼	11	1,949
"	Isle Reaux—Grosse Isle	1889		2			
"	" " (2nd cable)	1910		2			
"	On Grosse Isle (all told)	1885–94	3¼				
"	St. Jean—St. Famille (loop)	1904	11				
"	St. François—St. François Nord (looped wire)		10				
"	St. François—Baie St. Paul*	1906					
"	Crane Island to Montmagny	1905–09		5	5		
"	On Crane Island	1905	3		3	5	
"	Crane Island to Grosse Isle	1907		5	5		
"	Beauport—Laval	1909	15		15	4	229
"	Orleans Island Telephone System	1910	68		68	7	4,488
"	Kippewa Dam—Ville Marie	1910	33½		78½	9	376
"	Ville Marie—North Temiskaming	1911	45				
	Pelee Island System:						
Ontario	Leamington—Point-Pelee	1889	12				
"	Leamington Dock—Pelee Island	1901		17¾	45¾	18	1,035
"	On Pelee Island	1889-00	16½				
Northwest	Qu'Appelle—Edmonton	1883	625		625	22	
"	Moosejaw—Wood Mountain	1885	90½		90½	7	
"	Wood Mountain—Willow Bunch	1904	39½		39½		
"	Edmonton—Indian Ag. & Stoney Plain	1904	24		24	5	
"	Edmonton—Athabaska Ldg	1904	98		98	2	
"	Duck Lake—Batoche	1902	9				
"	Duck Lake—Indian Agency	1902	3½		12½	3	
"	Edmonton—St. Albert	1887	9				
"	St. Albert—Qui Barre and Alexandria	1902	27		36	4	
"	Lloydminster (loop) near Pitt	1904-09	58		58	1	
"	Victoria—Andrew and Whitford	1904-05	11½		11½	2	42,822
"	Qu'Apppelle—Lipton (loop)	1906	11		11	1	
"	Saddle Lake—Industrial School	1900	6½		6½	1	
"	Kamsac—Indian Agency	1907	6½				
"	Kamsac Indian Agency—Keys Reserve	1910	17		23½	6	
"	Limerick to Gravelburg (loop)	1910	42		42	1	
"	Fort Qu'Appelle to File Hills	1908	28		28	4	
"	Athabaska Lndg, towards Peace River	1909	70				
"	" completion to Peace River	1910	199		356	5	
"	Peace River Crossing to Dungavan	1911	72				
"	" to Shaftesbury (2nd wire)	1911	15				
	Carried forward		4513	234½	4747½	366	111,987

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GOVERNMENT TELEGRAPH SERVICE—*Concluded.*

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Offices.	Messages Sent.
			Land Lines.	Cables.	Total.		
			Miles Wire.	Kt's.			
	Brought forward		4,513	234½	4,747½	366	111,987
British Columbia	Victoria—Cape Beale	1891	118		118	12	
"	Nanaimo—Comox	1893	81		81	18	
"	Parksville—Alberni	1895	29½		29½		
"	Alberni—Cape Beale	1899	57		57	2	
"	" Clayoquot	1902	96¾		96¾	12	36,319
"	" Sechart Branch	1907	9		9		
"	Courtney—Campbell River	1908	40		40	3	
"	Union—Denman and Hornby Islands	1907	14	2	16	6	
"	Victoria—Metchosin	1908	14		14	1	
"	Duncan Station—Salt Spring Island	1902–04	24		24	5	
"	Salt Spring Island—North Pender Island	1907	16	4½	20½	5	
"	North Pender—South Pender	1908	7		7	5	3,395
"	Pender Island—Mayne Island	1908	11	1	12		
"	Mayne Island—Galino Island	1908	4	1	5	2	
"	Golden—Windermere	1901-02	92		92	12	2,410
"	Kamloops—Lower Nicola	1899	67		67	39	
"	Lower Nicola—Penticton	1905	168		168		
"	Vernon—Kilowna	1905	35		35		
"	Kilowna—Penticton	1906	45	1½	46½		60,969
"	Vernon—Lumby	1907	18		18	2	
"	Kamloops—Louis Creek	1908	36		67	8	
"	Louis Creek—Little Fort (Aitkens)	1910	31				s
"	Kamloops—Grand Prairie—Vernon	1910	84		84	6	s
	Sidney Island Line:						
"	Sidney to Cable landing	1910	1		5	2	1,170
"	Cable to Sidney Island	1910		2½			
"	On Sidney Island	1910	1½				
	Texada Island Branch:						
"	Campbell River—Quattica Cove	1910	1¼		47½	9	†
"	Quattica Cove—Valdes Island	1910		2			
"	On Valdes Island	1910	7¼				
"	Valdes—Mary Island	1910		4			
"	On Mary Island	1910	2				
"	Mary Island—Cortez Island	1910		½			
"	On Cortez Island	1910	7½				
"	Cortez Island—Sarah Point	1910		2			
"	Sarah Point—Powell River	1910	21				
Yukon	Ashcroft—Dawson and Boundary	1899-01	1,845			89	
"	Hazelton—Port Simpson and Aberdeen	1901–02	202½				
"	Tagish—Cariboo Crossing	1901	18		2,252½		
"	150 mile Station—Quesnelle Forks	1902	64				
"	Ashcroft—Lillooet	1896	62				
"	Quesnelle—Barkerville	1887	61				97,376
"	Ashcroft—Quesnelle (local wire)	1878–87	215		215		
"	Hootalinqua—Livingstone Creek	1907	35		35	2	
"	Aberdeen—Prince Rupert	1907	40		40	5	
"	Kitsumkalum towards Stewart	1910	70				
"	" completion to Stewart	1911	101		171	7	
	Total		8,383¼	256½	8,639¾	624	313,626

*For convenience in totalling, the knots of cable are regarded as statute miles.
†Count of messages included with Nanaimo—Comox line.
s " " " Kamloops—Lower Nicola, etc.

REPORT ON THE GOVERNMENT TELEGRAPH SERVICE, 1911-12.

EXPLANATORY NOTES.

The tabular statement prefacing this report shows the total mileage, &c., of the telegraph lines operated by the Government. Lines that have been subsidized or constructed and transferred by the Government for operation by private companies are not included in this list.

The matter in the following pages comprises a statement of specific actions taken in the course of the year; and in pursuance of the plan followed last year the particulars are given in separate reports, hereto subjoined, from the District Superintendents, and will be found indicated under the several divisional headings. In any case where no particular reference is made to a line found in the above-mentioned list, the understanding intended to be conveyed is that the line has been satisfactorily operated throughout the year, without any change of conditions since last made mention of in the annual report.

NEWFOUNDLAND.

The line from Port au Basque to Cape Ray continued to be operated as heretofore under an arrangement with the Anglo-American Telegraph Company.

MARITIME PROVINCES.

Cape Breton.—A number of new lines were projected but in consequence of but five-twelfths of the appropriations called for, having been made available at the beginning of the fiscal year, there was no actual construction undertaken. With the available funds, however, the requisite poles were in some instances obtained and distributed and the wire, insulators, etc., for the whole was purchased in readiness for further progress. The season was so far advanced before the balance of the appropriations became available, however, that the construction was deferred until the present season, 1912, and the several lines hereunder mentioned are in hand for completion.

South-West Margaree to South Ainsley (23 miles).
South Ainsley to Wycocomagh (7 miles).
Wycocomagh to Little Narrows (7 miles).
Wycocomagh to Orangedale (8 miles).
Loop to McAdams off Eskasoni line (2½ miles).
Loop to Hayes River off W. Ainsley line (2½ miles).
Loop to Big Intervale from N.E. Margaree (10 miles).
Little Narrows to Washabuck Centre (12 miles).
Baddeck-Nyanza—Rossville (21 miles).
Grand Narrows—Shenacadie (7 miles).
North Sydney—Sydney Mines and Florence (7 miles).

The repoling of the line between Port Hawkesbury and Meat Cove was partly performed in the season of 1911 and is being completed this year.

Scatarie Island.—The cable between Main-à-Dieu and Scatarie Island became interrupted on September 30, 1911 and was as early as practicable attended to by the ss. *Tyrian*. Repairs being made and communication restored on October 26 following.

A report (No. 1) from the District Superintendent, Mr. D. C. Dawson, covering the operation of the Cape Breton lines is hereto appended.

Tancook Islands, N.S.—An interruption of the Tancook Islands cable connection, the establishment of which for the local telephone company was mentioned in the annual report for 1909-10, was reported on September 1, 1911. The ss. *Tyrian* was shortly afterwards en route to the Bay of Fundy and restored the connection on the 29th of the same month.

BAY OF FUNDY.

Telephone Service.—In the autumn of 1911 an arrangement was made for the accommodation of the local telephone company whereby they have the use of the cables between Grand Manan and Eastport, Me., upon an equitable division of the chargeable tolls. To meet the local requirements on Grand Manan, the telegraph line extending from Flaggs Cove to Seal Cove is continued in operation.

Cable Interruptions and Repairs.—The cable between Cheneys Island and Whitehead Island developed some intermittent trouble on May 29, 1911, and the Gannet Rock cable was reported out of order on August 17. The ss. *Tyrian,* elsewhere employed in the interval, visited the locality in October (16-19, 1911) and restored communications.

The Partridge Island cables suffered some damage from vessels anchors and was reported out of order on August 16, 1911. They were as promptly as possible taken in hand by Supt. D. C. Dawson at St. John who succeeded in restoring the connections on September 5, 1911.

District Superintendency.—(Note June 28, 1912). There has to be recorded the very regrettable decease of Mrs. C. C. Seely who for many years occupied the office of District Superintendent with great credit to herself and advantage to the Government. Mrs. Seely passed away on April 11, 1912, and has been succeeded by Mr. J. R. Parker, who was for some time acting in the capacity of assistant and operator at Flaggs Cove.

A report (No. 2) from Mr. Parker covering the operations of the system, during the year ended March 31, 1912, is hereto appended.

QUEBEC.

Magdalen Islands Cable.—The cable between Old Harry and Meat Cove, C.B., became interrupted on May 8, 1911, and was repaired by the ss. *Tyrian* on June 3 following.

The same cable was interrupted again on September 30, 1911, and repaired by the ss. *Tyrian* on November 4. Trouble probably caused by the fouling of a vessel's anchor. During these interruptions communication between the Magdalen Islands and the mainland was meanwhile maintained by means of the Marconi wireless telegraph stations operated by the Department of Marine and Fisheries at Grindstone Island and Pictou, N.S.

NOTE.—The Old Harry-Meat Cove cable again ceased operation on March 20, 1912, and is awaiting attention by the ss. *Tyrian.* This vessel is detained at Halifax for some indispensable repairs to her hull, but will be got to sea again as early as practicable in the course of the season.

Brion Island Cable.—The cable between Grosse Isle and Brion Island gave out on June 8, 1911. A damaged spot was subsequently discovered on the beach at Grosse Isle and communication was restored by the local repairer on the 16th of the same month, but there was found to be still some intermittent trouble and communication finally ceased on November 15, 1911. It was too late for attention by the ss. *Tyrian*

and repair had in consequence to be deferred until such time as it can be undertaken in the course of the present season (1912).

Maintenance and Operation, Magadalen Islands.—A report (No. 3) from the District Superintendent, Mr. A. Le Bourdais, is hereto appended.

Anticosti Cables.—The Gaspé-Anticosti cable became interrupted on June 6, 1911, and was repaired by the ss. *Tyrian* on the 21st of the same month. The cable in this instance was broken just beyond the shore end off Fox River, Gaspé.

The Long Point-Anticosti cable became interrupted on July 28, 1911, and was repaired by the ss. *Tyrian* on November 22 following. The cable was found to have been broken in two places at spots, 8 miles off Anticosti and 5 miles off Long Point.

A report (No. 4) covering the operation of the Anticosti telegraph lines, from the District Superintendent, Mr. A. Malouin, is included in the appendix hereto.

North Shore St. Lawrence and Chicoutimi.—The working conditions have continued satisfactory. There were no extensions made in the course of the year.

The second of the cables that were laid by the ss. *Tyrian* across the mouth of the Saguenay as mentioned in the report for 1909-10 has been let without charge to the Charlevoix & Saguenay Telephone Company since December 20, 1910, but is releasable by them without notice in event of its being at any time required for our own purposes.

District Superintendency.—In consequence of the transfer to another district of the resident engineer at Chicoutimi, Mr. J. C. Tache, under whose supervision all of the recently constructed lines in this district had been built and maintained in working order, the whole was on January 1, 1912, transferred to the superintendency of Mr. E. Pope at Quebec who had previously all along had control of the operation and traffic.

A report (No. 5) from Mr. Pope covering the operations for the year is hereto appended.

North Shore St. Lawrence, East of Bersimis.—There was no new construction in this district in the course of the year. The ordinary general repairs were made on the several sections under the foremanship of the regular linemen. A report (No. 5a) from the District Superintendent, Mr. E. H. Tetu covering the operations throughout the year is included with the others in the appendix.

Quarantine Telegraph System.—The Crane Island-Montmagny cable was again damaged by ice and interrupted. The ss. *Tyrian* was brought up from the gulf for the purpose of making repairs and restored the connection on May 12, 1911. While in the vicinity, the *Tyrian* also overhauled and put in order the several short sections between L'Ange Gardien and Grosse Isle.

Orleans Island Telephone System.—In the autumn of 1910, there was begun the work of overhauling the pole line of the telegraph system and the stringing thereon of two wires for a metallic circuit for a telephone service as well. Early in 1911, this telephone service was established with separate agencies at the several parishes on the island. (See tabular statement in the appendix). An arrangement was made with the Bell Telephone Company whereby the line that they had in operation between L'Ange Gardien and St. Petronille was taken over and included in the Government system and a working arrangement was entered into whereby the tolls from any point on the island to Quebec is 15 cents for 3 minutes conversation and proportional charges for additional time; or 15 cents for messages of 20 words and 5 cents for each additional 5 words; of which in each instance the proportion of $\frac{2}{3}$ belongs to the company and $\frac{1}{3}$ to the Government. The local charges on the island, between stations, is 5 cents for 3 minutes conversation and a proportionate charge for additional time or 5 cents for messages of 20 words and 2 cents for each additional 5 words.

The rate of charge for telephones, aside from the commission offices, has been fixed as hereunder:—

For connection within ½ mile of regular station, $9 per annum.

For each additional ½ mile of line $4 per annum. The regular tolls being charged in addition on all main line connections.

Report of operation, &c.—The report (No. 6) hereto appended, from the District Superintendent, Mr. J. P. Pouliot, will be found to contain an account of the operating conditions, &c., throughout the year.

Timiskaming District Telephone Lines.—The Kippewa Dam-Ville Marie line 33½ miles mentioned in last years report was further extended under the superintendence of Mr. J. E. Gobeil to Quinze Dam and North Timiskaming in August, 1911. The total length of this line (Kippewa Dam to North Timiskaming) is 78½ miles. Connection is made at the last named place with the line of the Timiskaming Telephone Company operating to Haileybury, Ont., which place is in touch with the telegraph systems of the country.

Upon completion of the above line, the arrangements that had been made for the upkeep of the first section as mentioned in last year's report were set aside. A general repairer, Mr. Jos. Dumoulin, of Ville Marie being appointed for the whole line and to act as well in the capacity of local superintendent. A tabular list of the offices, staff, salaries, commissions, &c., is included with the others hereto appended. Also a report (No. 6a) from Mr. J. E. Gobeil of the headquarters staff under whose supervision the work of construction was performed.

ONTARIO.

The Pelee Island Telephone System continued in uninterrupted operation throughout the year (1911-12).

The appended report (No. 7) from Mr. J. McR. Selkirk, District Superintendent at Leamington is explanatory of the working conditions and of what suggested improvements might be especially provided for.

NORTHWEST, BRITISH COLUMBIA AND THE YUKON.

The separate reports (Nos. 8-12) appended hereto from the respective district superintendents will be found to convey an account of what has been done on these divisions of the service in the course of the fiscal year.

TELEGRAPH SERVICE GENERALLY.

Cableship Tyrian.—As mentioned elsewhere, the ss. *Tyrian* in the course of the season of 1911 made repairs to the cables of the quarantine system in the River St. Lawrence; the Magdalen Islands and mainland; the Gaspe-Anticosti section; Brion Island-Grosse Isle; Tancook Islands, N.S., Whitehead Island and Gannet Rock cables in the Bay of Fundy; Partridge Island cables, St. John, N.B.; Scatarie Island-Main-à-Dieu, N.S.; Magdalen Islands and mainland (second), and Long Point-Anticosti.

The vessel's operations were begun on May 20 and concluded on November 26, 1911.

A statement of the vessel's operations through the period of her active service, in the course of the year, is given in the accompanying report (No. 13) from Mr. A. B. McDonald, General Inspector of the Maritime Province lines, who accompanied the ship as usual in the capacity of electrician.

Provisioning of the Ship.—In the spring of 1911, the provisioning of the ship by contract with the Chief Steward was decided upon in reference to the previous day-to-day expenditure for the purpose. The report (13a) of Mr. D. A. McDonald, chief steward, in this connection is hereto appended.

Telegraph Systems of the Dominion.—As a matter of general interest, pursuant to the statement submitted last year, the latest figures to hand showing the extent of telegraph lines in operation in the Dominion are given hereunder:—

Canada.	Length of Lines in Miles.				Length of Conductors in Miles.				No. of offices
	Aerial.	Underground.	Submarine.	Total.	Aerial.	Underground.	Submarine.	Total.	
1911.	Pole line.								
Great North Western Telegraph Co.	11,386	.....	.....	11,386	47,483	.....	.....	47,483	1,227
Canadian Pacific Telegraph	12,004	3	....	12,007	68,721	90	.....	68,811	1,338
Western Union Telegraph Co.	2,639	32	....	2,671	11,255	44	.....	11,299	218
Government Telegraph service	7,900	.....	256	8,856	8,383	.....	256	8,639	...

REVENUE AND EXPENDITURE.

The revenue and expenditure for each of the Government lines in the several districts hereinbefore mentioned, are given in the following table:—

1911-12.	Expenditure.	Revenue.	Remarks.
Lower St. Lawrence and Maritime Provinces :—	$ cts.	$ cts.	
Anticosti lines	6,281 38	3,432 21	
Gaspé		76 80	
Bay of Fundy line	2,918 47	970 80	
Cape Breton lines	25,719 45	3,863 71	
Cape Ray (*Subsidy*)	250 00		
Escuminac line	675 60	237 79	
Isle aux Coudres (*Subsidy*)	700 50		
Father Point Agency	500 00		
Magdalen Islands	5,930 67	1,133 49	
Laval-Beauport Telephone Line		67 59	
Quarantine System	5,552 21	447 11	
Orleans Telephone Line		388 44	
North Shore East of Bersimis line	25,303 23	5,575 97	
North Shore West of Bersimis line	15,322 34	2,379 69	
Prince Edward Island and Mainland	6,946 66		
Cable Ship *Tyrian* :—			
Maintenance and repairs	55,914 76		
Generally :—			
Gulf and Maritime Provinces	5,259 23		
Ontario :—			
Pelee Island Telephone line	364 22	202 75	
Timiskaming District :—			
Telephone line	632 77	90 36	
Northwest Territories lines	53,788 49	16,026 70	
British Columbia :—			
Alberni-Cape Beale line	2,731 30	201 89	
Alberni-Clayoquot line	4,083 00	778 12	
Campbell River-Texada line	1,869 32	837 72	
Denman-Hornby Island line		58 54	
Nanaimo-Comox Line	7,883 22	2,812 73	
Nanaimo-Gabriola line		103 35	
Victoria-Cape Beale line	8,770 47	1,292 92	
Golden-Windermere line	3,811 18	2,307 05	
Salt Spring Island lines	580 03	1,212 49	
Sidney-Sidney Island line	31 61	182 00	
Vancouver Island lines	12,640 38	5,595 44	
Kamlooops-Okanagan Telephone line	19,441 44	20,753 83	
British Columbia service generally	6,900 55		
Yukon :—			
Ashcroft-Dawson	219,973 88	129,300 71	
Telegraph Service Generally	4,955 37		
Total	$505,731 73	$200,330 20	

Signal Service messages, Meteorological Service messages and reports, and Fisheries bulletins are handled free of tolls.

Departmental telephone service.—Up to the date of this report (April 1, 1912), the telephone connections with the central office of the Bell Telephone Company at Ottawa, listed as chargeable to the special appropriation, numbered 493, the annual charge for which amounts to $20,835.76. The connections are distributed amongst the several departments, as hereunder:—

Department.	Offices.	Residences.	Annual Charge.
			$ cts.
Agriculture	13	6	785 00
Auditor General	10	1	495 00
Census	1	1	115 00
Civil Service Commission	3	4	275 00
Customs Department	10	3	520 00
Dominion Police	11	3	558 00
Exchequer Court	1	1	105 00
External Affairs	2	1	138 00
Finance Department	8	5	540 00
Governor General (includ. Priv. System)	6	4	594 76
House of Commons	13	4	705 00
Indian Affairs	9	2	445 00
Inland Revenue	9	5	565 00
Interior Department	60	8	2,850 00
Justice Department	9	12	836 00
Labour Department	5	4	390 00
Mounted Police	3	1	145 00
Marine and Fisheries and Naval Department	31	15	1,851 00
Militia and Defence	35	14	2,094 00
Mines Department (including Geological Survey)	10	2	478 00
Parliamentary Library	1	2	120 00
Post Office Department	12	6	670 00
Privy Council	6	6	515 00
Public Works Department	42	16	2,028 00
Railways and Canals	13	11	945 00
Secretary of State	5	4	358 00
Senate	7	1	308 00
Stationery and Printing	1	6	1,037 00
Trade and Commerce	6	3	370 00
	342	151	20,835 76

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APPENDED TABLES.

The usual tabular statements of the lines and offices, staff, &c., of the telegraph service, following hereupon, will be found to contain whatever additions or changes have been made up to March 31, 1912.

D. H. KEELEY,

General Superintendent.

GOVERNMENT TELEGRAPH SERVICE.

NEWFOUNDLAND TELEGRAPH SERVICE.

No.	Stations.	Intermediate Distance.	Agents and Operators.	Memo.
1	Port au Basque	0	50 00 or commission	N.B.--The commission is 25 per cent upon all business to and from the office; said commission guaranteed not to be less than at the rate of $50 per annum.
2	Cape Ray Lighthouse	14	50 00 "	
	Totals	14	100 00	

N.B.—The above short line is constructed in connection with the Signal Service, and connects at Port au Basque with the land line system of the Anglo-American Telegraph Company.

GOVERNMENT TELEGRAPH SERVICE.

ANTICOSTI TELEGRAPH SYSTEM.

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		$ cts.		
1	Fox Bay	0				Closed Aug. 5, 1909.
2	Heath Point	2	C. Hubert	200 00 or commission	Aug. 1, 1900	For local agency. Cable removed.
3	South Point Lighthouse	32⅓	E. Leprise	100 00 "	July 1, 1903	Increased to $100 June 1, 1908.
4	Shallop Creek	17⅓	B. Bradley	360 00 per annum	July 7, 1881	Increased to $360 June 1, 1908.
5	Salt Lake	52½	Jos. Bourget, gen. reprer	420 00 "	July 17, 1906	Plus $1 per day when on duty as general repairer.
			Mrs. Bourget, operator	100 00 "	July 17, 1906	Increased to $100 June 1, 1908.
6	Southwest Pt. Lighthouse	15	A. Lemeux	430 00 "	July 1, 1901	Increased to $480 June 1, 1908.
			L. Lemieux	180 00 "	July 1, 1908.	
	Jupiter River	7		50 00 or commission.		
	Otter River	17½		50 00 "		
	Becsie River	22		50 00 "		
	Cape Eagle (Ellis Bay)	10	Jas. Duguay	100 00 "	June 20, 1906	Increased to $100 June 1, 1908.
7	West Point Lighthouse	9	A. Malouin, dist. supt.	404 00 per annum	Aug. 1, 1900	Increased to $404 June 1, 1908.
			A. Malouin, operator	100 00 "	Aug. 10, 1881.	
			Loz. Malouin, sub. opr.	480 00 "		
8	English Bay	3	F. Cabot	360 00 "	July 1, 1882	Increased to $360 June 1, 1908
			H. Malouin, gen. repairer	420 00 "	Sept. 10, 1909	From Mechastic Bay to South West Point.
	Mechastic Bay (cable landing).	14½				
	Totals	223½		$3,854 00		

Southwest Point connects with L'Anse à Fougère, Gaspé, by cable 44¼ knots; and from Mechastic Bay connection is made with Long Point of Mingan by cable 21 knots

0	L'Anse à Fougère		Thos. Dupuis	17 00		Special allowance for the cable terminus. A testing station only.
1	Gaspé Basin	28	J. J. Annett	540 00	Oct. 16, 1881	Transfer office. Connection with G.N.W. telegraph system. The salary was $480 per year previous to January 1, 1908.
		28		557 00		

MAGDALEN ISLANDS SYSTEM

1	Amherst	0	Miss J. Shea	62 00 or commission	Oct. 1, 1882	The Commission is 25 per cent on all business to and from the office in each instance; said commission guaranteed to be not less than at the rate of $50 per annum.
	To loop	4½				
2	Aurigny (on loop)	2¼		50 00 "		
3	Amherst Lighthouse	2				
	To main line	4¼	Wm. Reneau, repairer	180 00 "	June 9, 1908	Salary increased to $180, July 1, 1911.
	To cable	2¼	Wm. Cormier	50 00 "	June 11, 1881	
	Cable stretch	6½				
4	Etang du Nord village	1½	J. G. Binet, gen. rep	500 00 "	Dec. 1, 1900	Plus $1 per day when absent on duty.
			Mrs. A. Binet	100 00 "	Dec. 1, 1881	
5	Etang du Nord Lighthouse (on loop)	1½	N. Arsenault	50 00 "	Sept. 1, 1901	Two wire loop line.
	To main line	1½				
6	Grindstone	7	W. Leslie	Commission 25 p.c.	May 20, 1897	
7	Grindstone West	1	A. LeBourdais, dis. supt.	900 00 "	Aug. 17, 1880	Plus $1 per day when absent on duty. The salary was $720 per annum prior to July 1, 1908.
	To cable (on loop)	¼				
	Cable stretch (on loop)	½	J. J. LeBourdais	500 00 "	May 25, 1904	Salary increased to $500, Dec. 1, 1911.
8	House Harbour (on loop)	2¼	Camille Delaney	50 00 or commission	June 1, 1888	
9	Pointe Basse (on loop)	3	H. Arseneau	50 00 "	Aug. 1, 1902	
10	South Beach (on loop)	3				
	To main line (wire)	8¼	F. Chevrier	50 00 "	July 1, 1905	
	To main cable	½				
	To loop	2¼				
11	Cap Verte (on loop)	¾	Mrs. G. Cyr	50 00 "	June 22, 1909	
	To main line	¾				
12	Wolfe Island	12				
13	Grosse Isle	11¼	N. Clarke	420 00 or commission	June 1, 1888	For repeating station. Prior to Dec. 1, 1902, the allowance was $200 and commission for local agency.
			J. Quinn	240 00 "	Dec. 1, 1902	
14	Old Harry	9	L. C. Clarke	50 00 "	Mar. 8, 1907	
15	Grand Entry	5¾	Mrs. F. Atkins	50 00 "	Feb. 18, 1882	
	CABLE CONNECTIONS.					
	Grosse Isle	0				
	Old Harry (wire only)	9	(Cable landing)			
	Cable to Meat Cove, Cape Breton	55	(See Meat Cove Line)			
	Grosse Isle	0				
	Cable to Brion Island	11				
16	Brion Island	1	W. Dingwall	150 00 or commission	Jan. 1, 1903	Two wire loop line from terminal hut for Grosse Isle cable.
17	Brion Lighthouse	3½	P. Chevrier	50 00 "		
	Amherst	0				
	Cable to Entry Island	6¾				
18	Entry Island Lighthouse	2				
	Total	181¾		$3,552 00		

Total mileage, Magdalen Islands system: Land wires, 101½; Cables, 80¼; Pole Line, 83¾.

GOVERNMENT TELEGRAPH

NORTH SYDNEY—

No.	Offices.	Intermediate Distances. Embracing. Wire.	Pole line.	Cables.	Agents and Operators.
		Miles.	Miles.	Miles.	
1	Meat Cove*	0			
	To loop	7	7		Mrs. H. L. McEachern.
2	Bay St. Lawrence (loopwire)	½			V. Therriault. Mrs. V. Therriault, Asst.
	Money Point (Branch line)	8	8		See accompanying table.
3	Aspy Bay	4½	4½		R. G. Zwicker.
4	Cape North Island	5	5		N. A. McDonald.
	To loop	1	1		
5	Dingwell (loopwire)	5½			Joe O'Brien.
	To loop	10	10		
6	Neils Harbour (loopwire)	2½			Arch McLean.
7	Ingonish	9	9		Mrs. S. S. Burke.
8	South Ingonish	10½	10½		Mrs. M. C. Williams.
9	Ingonish Ferry (¼ mile cable included)	2¼	2	¼	Mrs. M. A. McKinnon.
10	Wreck Cove	9	9		Miss Mary Morrison.
11	French River	5	5		John McDonald.
12	Breton Cove	2	2		D. B. McLeod.
13	Indian Brook	7	7		Sadie McDonald.
	To loop	2	2		
14	Murray (on loop)	8			R. B. Matheson.
15	North River Bridge (on loop)	2			D. J. Morrison.
	To main line	10	10		
16	Englishtown (¼ mile cable included)	4	3¾	¼	J. D. McAskill.
17	South Gut (on loop)	5			Rachel Morrison.
18	Baddeck (on loop)	13			L. M. Anderson.
	To Englishtown	18	18		
19	Kellys Cove (New Campbellton)	12	12		Miss A. Morrison.
20	Big Bras d'Or (½ mile cable included)	2½	2	½	D. Livingston.
21	Little Bras d'Or (350 ft. cable included)	8	8		Miss D. E. Grantmyer.

*Meat Cove station connects with the Magdalen Islands system by cable to Old Harry Head, 55 telephones.

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SERVICE—*Continued.*

MEAT COVE SECTION.

Salaries per Annum.	Date of Appointment.	Memo.
$ cts.		
50 00 or commission*	Sept. 1, 1897.	*Where not otherwise stated the commission is 25 p.c. of the tolls for the Government line on all business to and from the office in each instance; said commission guaranteed to be not less than at the rate of $50 per annum.
720 00	May 1, 1902.	Cable station at Bay St. Lawrence in place of Meat Cove since September 1, 1906.
420 00	" 1, 1902.	
. . . . .	. . . . .	
50 00 or commission. . . .	Jan. 19, 1910.	This office was formerly in charge of the late Mr J. Y. Nichols.
50 00 "	May 13, 1904.	
50 00 "	Nov. 1, 1907.	
50 00 "	Feb. 1, 1912.	
50 00 "	June 1, 1904.	
50 00 "	Jan. 11, 1910.	Formerly in charge of Mr. Geo. Brewer, resigned.
50 00 "	Oct. 1, 1903.	
50 00 "	May 18, 1908.	
50 00 "	April 1, 1899.	
25 p.c. commission. . .	July 19, 1907.	
50 00 or commission. . . .	Feb. 1, 1907.	
50 00 "	Jan. 29, 1902.	Closed during winter of 1909-10.
50 00 "	Oct. 5, 1909.	
120 00 and commission and 25 p.c. R. & Cks. . . .	Mar. 28, 1912.	Mr. W. Bingham, deceased, Jan. 8, 1912. Switching point for Baddeck line.
50 00 or commission. . . .	Sept. 1, 1904.	
150 00 and 25 p.c. R. & Cks.	June 17, 1904.	Salary.—$120 per year previous to this appointment. Former agent Mr. A. Anderson.
. . . . .	. . . . .	This loop to Baddeck starts from and returns to Englishtown.
50 00 or commission. . . .	Dec. 2, 1909.	
100 00 "	Jan. 1, 1889.	Increase from $50 to $100 since November 1, 1904.
50 00 "	Dec. 1, 1906.	
2,310 00		

knots, and Bay St. Lawrence with St. Pauls Island by a cable of 20 knots. The latter is operated with

DOMINION TELEGRAPH

NORTH SYDNEY—

No	Offices.	Intermediate Distances. Embracing. Wire. Miles.	Pole line. Miles.	Cables. Miles.	Agents and Operators.
22	North Sydney	4½	4½		W. U. Tel. Co.
	Instructor				Miss B. Bingham, Englishtown.
	General Inspector				A. B. McDonald, North Sydney.
	District Superintendent for all lines in Cape Breton				D.C. Dawson, St. John, NB
	Total	177¾	140¼	1	
	Repairers' Sections.				
	General—				
	Meat Cove—Big Bras d'Or	162¾	125¾	½	S. S. Burke, Ingonish.
	Big Bras d'Or—North Sydney	15	14½	½	Jos. Logue, North Sydney.
	Local—				
	Meat Cove—Money Point and Aspy Bay	20	19½		Angus S. McDonald.
	Aspy Bay—Neils Harbour	24	16		M. McCaskell.
	Neils Harbour—Ingonish Ferry	21¾	21½	¼	Frank Warren.
	Ingonish Ferry—Englishtown	29	28¾	¼	N. M. McLeod.
	Baddeck Loop Line	36	18		D. McAuley
	Murray Loop Line	20	10		J. Smith.
	Englishtown Big Bras d'Or	14½	14	½	H. Murdoch Campbell.
	Big Bras d'Or — North Sydney	12½	12½		Duncan McRae.
	Total	177¾	140¼	2	
	Money Point Branch.				
1	Bay St. Lawrence	0			V. Therriault.
2	Bay St. Lawrence Beach	1½	1½		J. O'Brien.
3	Cape North Light (Money Point)	5½	5½		Norman McLeod.
4	Cape North Fog Alarm (Money Point)	1	1		Stanley Hackett.
		8	8		(Included in the mileage.
	St. Pauls Branch.				
	Bay St. Lawrence	0			
	St. Pauls Island (Inc. 20 Kts. cable)	23	3	20	J. Campbell.

SESSIONAL PAPER No. 19

SERVICE—*Continued.*

MEAT COVE SECTION—*Continued.*

Salaries per Annum.	Date of Appointment.	Memo.
$ cts.		
2,310 00 Commission only..	.....	The commission is 50 p.c. on local business and 25 p.c. on through messages; and covers supervision of line and office accommodation at North Sydney.
600 00	Nov. 1, 1902.	Salary increased to $600 Aug. 1st 1911.
1,500 00	May 9, 1905.	Increase to $1,500 from April 1st, 1909.
720 00	Jan. 24, 1892.	Allowance of $300 per year in addition for office rent, &c. Mr. McDonald accompanies the ss. *Tyrian* as electrician in connection with the cable laying and repairing.
5,130 00		Latest adjustment of allowance dates from July 1, 1907. The C. B. lines are operated in conjunction with the Western Union Telegraph.
540 per annum.....	April 1, 1904.	Increased from $480 March 1st, 1911.
(See Eskasoni line, &c.).. . .	.....	Horse hire allowed in addition since Dec. 1, 1909.
80 00 per annum.....	June 10, 1910.	NOTE.—The rates of allowance are as adjusted in June, 1910.
90 00 "	Prior to June 1910	In reckoning the repair sections, loops (2 wire lines) are taken as equivalent to 50 p.c. additional pole line. Thus the Murray loop 20 miles of wire and 10 miles of poles is equivalent to 15 miles of pole lines.
90 00 "	" "	
100 00 "	" "	
100 00 "	Prior to June 1910...	
60 00 "	" "	
60 00 "	" "	
60 00 "	June 1, 1910.	
1,180 00		
Accommodation.....	Dec. 10, 1907.	This line was established and is being operated by tele phone in the interest of the Signal Service.
"	" "	
"	June 1, 1909.	
of the Meat Cove, North Syd ney section).		
....		
50 00 or commission.....	Oct. 1, 1890.	

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

NORTH SYDNEY—MEAT COVE SECTION—*Concluded.*

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Repairers' Sections—Con.	Miles.		$ cts.		
	Baddeck Loop Line	36	D. McAuley	100 00 per annum	Prior to June, 1910	
	Murray Loop Line	20	J. Smith	60 00 "	" "	
	Englishtown—Big Bras d'Or	14½	Murdoch Campbell	60 00 "	" "	
	Big Bras d'Or - North Sydney	12½	Duncan McRae	60 00 "	June 1, 1910	
		177¾		280 00		
	Money Point Branch.					
1	Bay St. Lawrence	0	V. Therriault	Accommodation	Dec. 10, 1907	This line was established and is being operated by telephone in the interest of the Signal Service.
2	Bay St. Lawrence Beach	1½	J. O'Brien	"	Dec. 10, 1907	
3	Cape North Light (Money Point)	5½	Norman McLeod	"	Dec. 10, 1907	
4	Cape North Fog Alarm (Money Point)	1	Stanley Hackett	"	June 1, 1909	
	Total	8				

CAPE BRETON: NORTH SYDNEY, BOULARDERIE AND ESKASONI SECTIONS.

	Boularderie Line.					
	North Sydney.					
	Little Brasd'Or (M.C. pol's)	4½	(See Meat Cove Line)			
1	Alder Point (loop line)	5	Mrs. John Arsenault	50 00 or commission	Dec. 1, 1906	The commission is 25 p. c. of the Govt. line tolls in each instance and is guaranteed to amount to not less than $50 per annum.
2	Groves Point (1 mi. M. C. poles)	3	Mrs. Mary Dunlop	50 00 "	Dec. 1, 1906	
3	Hillside	4	Mrs. Annabelle McKenzie	50 00 "	Feb. 1, 1907	
4	Boularderie West	4	John McIntyre	50 00 "	Jan. 1, 1907	

5 S. S. Boularderie	3	Donald McRae	50 00	"	Jan. 1, 1907	
6 Pointe Clear	4	Mrs. M. McLeod	50 00	"	Dec. 1, 1906	
7 Upper Kempt Head	7	Mrs. Murdock McKenzie	50 00	"	Oct. 6, 1904	
8 Ross Ferry	6½	Mrs. J. F. McKenzie	50 00	"	Oct. 1, 1911	
9 Boularderie Centre	6	Mrs. J. B. McKenzie	50 00	"	Oct. 6, 1904	
Big Bras d'Or	7½	(See Meat Cove line)				
Total miles wire	54½	Pole line 51.	450 00			
Repairers' Sections.						
Alder Point– Little Bras d'Or	5	Captain John Arsenault.	50 00	or commission	Jan. 1, 1907	
Big Bras d'Or -- Upper Kempt Head	20	J. A. C. McKenzie	50 00	"	Jan. 1, 1907	
Little Bras d'Or– Upper Kempt Head	24	M. McLeod	50 00	"	July 12, 1909	
On Meat Cove poles	5½					
General repairer		Jos. Logue	(See below)			
Total	54½		150 00			
Eskasoni Line.						
North Sydney						
1 French Vale(5½ on Gabarus poles)	11	John J. McLean	50 00	or commission	Mar. 25, 1907	The commission is 25 p. c. of the Govt. line tolls in each instance and is guaranteed to amount to not less than $50 per annum.
2 Gillis Lake	5	Daniel H. Gillis	50 00	"	Feb. 28, 1907	
3 East Bay	4	Miss M. L. McNeil	50 00	"		
4 North Side, East Bay	6	James J. Gillis	50 00	"	Jan. 15, 1907	
5 Eskasoni	5	Miss Sadie McMillan	50 00	"	Dec. 6, 1907	
6 Castle Bay	6	Miss Maria McDonald	50 00	"	Jan. 10, 1907	
7 Benacadie Pond	5	J. N. McNeil	50 00	"	Mar. 20, 1909	
8 Benacadie	5	Hugh Farrell	50 00	"	Mar. 20, 1909	
9 Piper's Cove	2	M. D. McNeil	50 00	"	Mar. 20, 1909	
10 Grand Narrows	4	J. J. McNeil	50 00	"	May 1, 1910	Previously in charge of Daniel McNeil.
Total miles of wire	53	Pole line 47½.	500 00			
Repairers' Sections.						
On Meat Cove poles	5½	A. G. McLean, McLeanville.	50 00	per annum	June 1, 1907	
From Meat Cove Line to Gillis Lake	10½					
From Gillis Lake to Eskasoni (Castle Bay)	21	Duncan Gillis, North Side, East Bay	50 00	"	June 1, 1907	

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

CAPE BRETON—NORTH SYDNEY, BOULARDERIE AND ESKASONI SECTIONS—*Continued.*

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Repairers' Sections Con.	Miles.		$ cts.		
	From Castle Bay to Grand Narrows	16	J. L. McDonald, Grand Narrows	50 00 per annum	June 10, 1909	
	Total	53		150 00		
	General Repairer.					
	Boularderie line	54½	Jos. Logue, North Sydney	540 00 per annum	Jan. 1, 1906	Horse hire allowed in addition.
	Eskasoni line	53				
	Gabarus line: North Sydney—Leitche's Creek	5¾				
	Meat Cove line: North Sydney—Big Bras d'Or	15				
	Total	128¼				

BAY ST. LAWRENCE—HAWKESBURY SECTION.

	Bay St. Lawrence	0	(See North Sydney line).			
1	Meat Cove (2nd wire)	7¼	" "			
2	Cape St. Lawrence	4	Mrs. C. Jamieson	50 00 or commission	Jan. 1, 1904	The commission is 25 p.c. on all business to and from the office in each instance; said commission guaranteed to be not less than at the rate of $50 per annum.
	¼ way	1½				
	Poulets Cove	5½				
3	Pleasant Bay	8	Mrs. G. P. McIntosh	50 00 "	Sept. 1, 1907	
	Barren	10				
4	Cheticamp (Eastern Harbour)	10	Chas. J. Aucoin		Aug. 3, 1905	50 p.c. Receipts and cheques without guarantee.
5	Grand Etang	8				Closed in March, 1905.
6	Margaree Harbour	8	A. B. C. McLean	120 00 without com'n	Oct. 20, 1896	Allowance 50 p.c. Receipts and cheques government line prior to May, 1910.
7	Margaree Forks	8	Sarah McDougall	50 00 or commission	Sept. 10, 1908	
8	N. E. Margaree (loop wire)	10	Mrs. J. D. Ross	50 00 "	Feb. 1, 1898	

9	S. W. Margaree	4	Mrs. M. Collins	50 00	"	Jan.	1, 1912	
	To loop	12						
10	Inverness (loop wire)	8	Mrs. G. F. McLean	360 00	without com'n.	April	1, 1912	Plus $12 per annum for Battery care.
11	Strathlorne (Willow Bank)	3	Miss Rosa McLean	180 00	and commission	Nov.	1, 1908	
12	Mabou	9	Mrs. M. McDonald	120 00	without com'n.	April	1, 1887	
13	Port Hood	10	D. J. McDonald	50 00	or commission.	July	1, 1903	
14	Smith's Id. (on loop) 1 mi. cable included	3¼	Miss E. L. Smith	50 00	"	Nov.	1, 1907	
15	Henry Id. (on loop) 1½ miles cable included	3½	Miss C. McLennan	50 00	"	Nov.	8, 1907	
	To Port Hood, 2½ miles cable included	6¾						
16	Judique	10	Miss M. C. McDonald	50 00	"	Jan.	1, 1912	
17	Craignish (Craigmore)	8	Allan Cameron	50 00	"	Nov.	1, 1903	
18	Port Hastings	10	Miss M. McFarlane	50 00	"	Nov.	1, 1903	
19	Hawkesbury	3¾	Miss E. McDonald	240 00	without com'n	Nov.	1, 1903	
	Total	171½		1,570 00				

Miles of wire, 166½; miles of cable, 5; miles of pole line, 146.

	Wycocomagh Branch Line.							
	Strathlorne (Willow B'nks)	0						
1	McCormick (Loch Ban)	2¼	Mrs. Agnes McCormick	50 00	or commission.	Mar.	4, 1910	Repeating office, $15 per month, plus $1 per month for battery care from May 1, 1910 (C. 972).
	To loop	6						
2	West Lake	2¾	P. M. McInnes	50 00	"	Mar.	4, 1910	
	To main line	2¾						
3	Brook Village	6	Mary McDaniel	50 00	"	Mar.	4, 1910	
4	Wycocomagh	12½	Daniel Ross	50 00	"	Mar.	4, 1910	
	Total miles of wire	32¼	Pole line, 29½	200 00				
	Repairers' Sections.							
	General—							
	Meat Cove—Inverness	104½	P. A. Doyle, Inverness	480 00	per annum	Feb.	1, 1912	Horse hire allowed in addition to salary.
	Inverness-Hawkesbury	67¼	J. F. McMillan, Port Hastings			May	17, 1910	Prior to March 1, 1911. Salary $35 per month.
	Wycocomagh Line	32¼		480 00	"	May	17, 1910	" " " "
	Local—							
	Bay St. Lawrence—Meat Cove	7¼	(See North Sydney Line)					
	Meat Cove—Half-Way Shanty	5½	R. Fraser	40 00	"	May	20, 1903	
	Half-Way Shanty—Poulets Cove	5½	E. Fraser	30 00	"	May	20, 1903	

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

BAY ST. LAWRENCE—HAWKESBURY SECTION—*Continued.*

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		$ cts.		
	Poulets Cove—Pleasant Bay	8	K. Fraser	40 00 per annum	May 20, 1903	
	Pleasant Bay—Barren	10	E. J. Timmons	40 00 "	Mar. 16, 1909	
	Barren—Cheticamp	10	.....	40 00 "	.....	Mr. J. A. Chaisson former repairer resigned on February 15, 1912.
	Cheticamp—Grand Etang	8	Joseph L. Chaisson	40 00 "	July 1, 1905	
	Grand Etang—Margaree H.	8	H. K. McLean	25 00 "	July 1, 1905	
	Margaree H. S. W. Margaree and N. E. Margaree loop	22	J. F. Miller	50 00 "	Mar. 16, 1912	Mr. A. McFarlane, deceased, January 31, 1912.
	S.W. Margaree—Strathlorne	23	J. D. McFarlane	40 00 "	June 4, 1902	
	Strathlorne—Mabou	9	L. G. McDougall	40 00 "	Nov. 3, 1902	
	Mabou and Judique	20	J. A. Campbell	50 00 "	Aug. 1, 1904	Of this section (see list) 5 miles is submarine cable; the land line portions covering but 4½ miles of 2-wire line for the loop.
	Judique and Port Hawkesbury	21¾	J. N. McIsaac	50 00 "		
	Pt. Hood Islands	13½	Ambroise Smith	20 00 "	Aug. 1, 1908	
	Total	171½		1,460 00		

CAPE BRETON—HAWKESBURY—SCATARIE ISLAND SECTION.

	Hawkesbury	0	(See Bay St. Lawrence line).			
1	River Bourgeois	26	M. E. Boyd	50 00 or commission	Nov. 1, 1903	The commission is 25 p.c. of the Government line tolls, and is guaranteed to amount to not less than $50 per annum. Where 50 p.c. commission is paid there is no guarantee as to amount.
2	St. Peters	6	R. C. Morrison	100 00 "	Nov. 1, 1903	Main battery at St. Peters.
3	Rockdale	4	D. B. Pottie.	Commission (25% only)	Nov. 1, 1909	
	To loop	23				
4	Lower Lardoise (loop wire)	½	Mrs. E. Finlayson	50 00 or commission	May 11, 1910	
5	Grand River	7	Miss E. A. Finlayson	120 00 and "	June 1, 1903	Repeating office. Allowance $50 and commission prior to April 1, 1912.
6	St. Esprit (Laframboise Intervale).	13	Mrs. J. D. Morrison	50 00 "	Sept. 1, 1906	

7	Fourchie (Fourchu)	13	John McKinnon	50 00 "	June, 22, 1910		
	To loop.	16					
8	Gabarus (loop wire)	3	Miss C. Grant	360 00 without comm'n	Jan. 16, 1904		Repeating office. Automatic repeaters for North Sydney line. $3 per month in winter for attending fire. Rent allowance $75 per annum.
9	Louisburg	11	Wesley Townsend	50 00 or commission	Feb. 1, 1904		
10	Big Lorraine	3	Fraser Wilcox	Accommodation office	June 1, 1910		
11	Main-a-Dieu	10	G. S. Lewis	50 00 or commission	Oct. 1, 1910		Main battery at Main-a-Dieu. $50 per annum for rent.
	To landing	1					
12	Scatarie Island West (cable)	3¼	E. E. Pope	50 00 "	Aug. 15, 1904		
13	Scatarie Island East	7¼	J. T. Martel	50 00 "	Aug. 1, 1904		$8 per annum for care of main battery.
	Total	126¾		980 00			

Miles of wire, 123½; miles of cable, 3¼; miles of pole line, 121¾.

	Grand River — Gabarus Line.						
	Grand River	0	(See Hawkesbury line)				
	To loop.	7					
1	Grand River Falls (loop wire.)	3	Mrs. E. D. McKillop	50 00 or commission	Dec. 20, 1907		
2	Loch Lomond	5½	A. Morrison	50 00 "	Nov. 1, 1911		
3	Enon	4	Miss E. McDonald	50 00 "	May 13, 1908		
	Salmon River	16					
	Victoria Bridge	8					
4	Gabarus (North Sydney line poles, 2½ miles).	5	(See Hawkesbury line)				
	Total	48½	Pole line, 44½.	150 00			
	N. Sydney—Gabarus Line.						
	North Sydney	0	See Meat Cove line				This line between North Sydney and Gabarus, with out any intermediate offices prior to June, 1910, has been in operation since December 11, 1903.
1	Ball's Creek	9	D. A. McCormick	Commission (25% only)	June 1, 1910		
2	Marion Bridge	17½	Mrs. John E. Morrison	50 00 or commission	June 1, 1910		
3	Gabarus (Hawkesbury pole line, 3 miles)	12	(See Hawkesbury line).				
	Total	38½	Pole line, 35½	50 00			
	Repairers' Sections.						
	Local—						
	Grand River to Enon	19½	H. Urquhart, Grand River	50 00 per annum.	June 10, 1909		

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

CAPE BRETON—HAWKESBURY—SCATARIE ISLAND SECTION—*Continued.*

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		$ cts.		
	Repairers' Sections—Con.					
	Grand River to Fourchu	26	D. McKillop, Grand River	50 00 per annum	June 10, 1909	
	General—					
	Hawkesbury to Gabarus	89¾	M. McRae, St. Peters	480 00 " "	Feb. 1, 1912	Horse hire allowed in addition since December, 1, 1909. Salary $35 per m. prior to 1 Mar., 1911.
	Gabarus to Leitches Creek	33				
	Gabarus to Scatarie Id E	33½	E.M. Dickson, Louisburg	540 00 " "	Aug. 1, 1907	Horse hire allowed in addition.
	Gabarus to Enon	29				
				1,120 00		

New Lines—Baddeck—Nyanza, 6¼ miles; Nyanza—Little Narrows, 13¼ miles—19½ miles.

CHATHAM—ESCUMINAC, N. B. TELEGRAPH SYSTEM.

1	Chatham	0	Great Northwestern Telegraph Co	185 00			This amount is paid for supervision of the line and office accommodation at Chatham.
2	Black River	15½	M. McDougall	50 00	or commission	July 1, 1904	The commission is 25 p.c. of the Government line tariff receipts in each instance, and is guaranteed to amount to not less than $50 per annum.
3	Baie du Vin	5	M. A. Williston	50 00	"		
4	Lower Hardwicke	6	Mrs. M. Bremner	50 00	"	Aug. 1, 1891	
5	Escuminac	3¾	D. Lewis	50 00	"	Sept. 1, 1885	
6	Point Escuminac light-house	12	K. R. McLennan	50 00	"	Nov. 1, 1893	$12 per annum allowed for care of main battery at Point Escuminac.
	Total	42¼		435 00			

NOVA SCOTIA TELEGRAPH SYSTEM.

Cape Sable Section.

1	Barrington	0				This line has been leased to the Barrington Telephone Company from August 12, 1897. The lease is terminable at any time.
2	Newelton (including 1½ knots cable)	11				
3	Cape Sable Island lighthouse (including ¼ mile cable)	6¾				
		17¾				

East Coast Section.

N.B.—In connection with the Signal Service, a land line, 208 miles in length, was erected in 1881, between Canso and Halifax, for a bonus of $16,000, and is maintained and operated by the Western Union Telegraph Company, without further cost to the Government.

BAY OF FUNDY, N.B., TELEGRAPH SYSTEM.

Grand Manan and Campobello Islands.

				$ cts.		The commission of 25 p.c. on all Government line business to and from the office and commission guaranteed not to be less than at the rate of $50 per annum. When 50 p.c. commission is paid there is no guarantee as to amount.
	Grand Manan—					
1	Long Eddy Cable Hut to Flaggs Cove	3				Mrs. C. C. Seely, deceased, April 4, 1912.
	"		J. R. Parker, Dist.-Supt.	540 00	May 14, 1912.	Rent $100 per annum. Fuel, about $50.
	"		A. Gilmour, repairer	60 00	Dec. 1, 1894.	
2	Castalia	2½	Geo. E. Dalzell	25 p.c. commission	June 1, 1898.	
3	Woodwards Cove	3½	M. A. Fraser	50 " "	Feb. 28, 1893.	
4	Grand Harbour	2	I. L. Newton	75 00 or commission.	April 1, 1887.	$25 per annum included for repeating White Head Branch. Seal Cove also $25 *re* Gannet Rock Line.
5	Seal Cove	4½	J. A. Ingersoll	75 00 "	Sept. 22, 1899.	
6	"	¼	Mrs. Robert Fraser	25 00 "	Jan. 1, 1906.	
7	Deep Cove	2	O. McLaughlin	25 p.c. "	April 1897.	
8	Southern Head	3¼	T. Foster	25 " "	Dec. 1, 1910.	Southern Head office is now operated by telephone from Seal Cove.
	Branch Lines.					
	Grand Harbour—					
9	Cheney's Island, ½ knot cable	4¾	S. E. Russell	25 " "	Feb. 1, 1891.	
10	White Head Island, ¾ knot cable	1½	Mrs. H. Leary	50 00 "	July 1, 1910.	
	Cable, Long Eddy to Herring Cove	10				

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

BAY OF FUNDY, N.B., TELEGRAPH SYSTEM—*Continued.*

GRAND MANAN AND CAMPOBELLO ISLANDS—*Continued.*

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Campobello.	Miles.		$ cts.		
11	Herring Cove Cable Hut to Welch Pool	4 3/4	E. J. Mitchell	210 00 and commission	May 1, 1905.	Rent, $60 per annum. Fuel, about $30.
	Cable across channel	1 3/4	Wellington Parker, lineman	2 00 per day		Employed occasionally.
12	Eastport, Me., U.S.A.	1/2	George H. Cushing	200 00	Dec. 26, 1881.	
	Totals	44 1/4		1,235 00		
	Gannet Rock Line.					
	Seal Cove	0		(See above)		This line is operated in the interest of the Dept. of Marine & Fisheries. Tariff to Grand Manan 15 & 1. Tariff to Campobello and Eastport 25 & 2.
13	Wood Island (cable)	1 1/2	P. Green	25 p.c. commission	Nov. 7, 1910.	
14	Little Wood Isld. (cable 1/2)	2 1/4	T. Ingalls	Accommodation	" 7, 1910	
15	Gannet Rock (cable)	7 1/4	Agt. M. & F.	"	" 7, 1910.	
	Total	11	(9 1/4 knots cable 1 3/4 miles	land line.)		

CHICOUTIMI AND NORTH OF ST. LAWRENCE TELEGRAPH SYSTEM.

CHICOUTIMI—TADOUSAC SECTION.

1	Chicoutimi	0	J. D. Villeneuve, insp.	660 00	April 1, 1906.	NOTE.—Since Jan. 1, 1912, the superintendence of this line, formerly in hands of Mr. J. C. Tache, Resident Engineer at Chicoutimi, has been included in that of Mr. E. Pope at Quebec.
			J. A. Couet, clerk	180 00	" 1, 1906.	
			T. Villeneuve, operator	540 00	" 1, 1907.	
			J. P. Rivard, operator.	480 00	Aug. 1, 1909.	
			J. Dube, messenger	120 00	Sept. 1, 1909.	
			M. Desbiens, cleaner	72 00	Aug. 1, 1906.	
			J. Fortin, repairer	420 00	June 1, 1897.	
2	Ste. Anne	2 1/2	Miss A. Gauthier, op'r.	50 00	Feb. 1, 1909.	
			P. Gauthier, repairer	350 00	" 1, 1904.	
3	St. Fulgence	8	Rev. G. H. Gagnon, op'r	50 00	Jan. 1, 1904.	

4	Lac Laurent	8	S. Gagnon, operator	50 00	April 1, 1906.	
			J. Brisson, repairer	360 00	June 1, 1906.	
5	Descente des Femmes	9	Aug. Villeneuve, op'r	50 00	April 1, 1906.	
6	Ste. Marguerite Depot	34	E. Simard, operator	50 00	Aug. 1, 1909.	
7	Ste. Marguerite	2	Mrs. P. Hervieux, op'r	50 00	April 1, 1906.	
8	Sacre Cœur	8	Miss L. Maltais, op'r	50 00	" 1, 1906.	
			H. Gravel, repairer	360 00	June 1, 1906.	
9	Tadousac	12½	Eugene Caron, agent			See North Shore line.
		84		3,892 00		

CHICOUTIMI—PERIBONKA SECTION.

1	Chicoutimi	0	(See above.)			
2	Ste. Anne	2½	" "			
	To loop	5½				
3	Shipshaw North, loop wire	4	J. Murdock, operator	50 00	Nov. 1, 1903	
4	Shipshaw	1	Miss M. Dufour, operat'r	50 00	Nov. 1, 1907	
5	St. Leonard	4	Geo. Gagnon, operator	50 00	Sept. 1, 1903	
	To loop	2				
6	St. Ambroise loop wire	8	A. Simard, operator	50 00	June 1, 1905	
7	St. Charles Borromée	4½	B. Bouchard "	50 00	Sept. 1, 1903	
8	Taché	7	Jean Fradette "	50 00	Jan. 1, 1908	
	To loop	4½				
9	St. Joseph d'Alma, loop wire	6	Elie Gagné, operator	50 00	Jan. 1, 1908	
			Gédéon Verreault, rep.	360 00	Mar. 1, 1909	
10	St. Cœur de Marie	6	Alf. Rousseau, operator	50 00	Jan. 1, 1908	
11	La Pipe	6½	Hypolite Boivin "	50 00	Jan. 1, 1908	
12	Honfleur	8	Charles Lindsay "	50 00	Jan. 1, 1909	
13	Peribonka	9	Mrs. E. Niquette "	50 00	Jan. 1, 1909	
		78½		910 00		

CHICOUTIMI—LAC CLAIR SECTION.

1	Chicoutimi	0	(See above.)			
2	Ste. Anne	2½	" "			
3	Range 6	3	Thos. Simard	50 00	Nov. 1, 1905	
4	Lac Charles	3	A. Dufour	50 00	Nov. 1, 1904	
5	Lac Clair	4	L. Boulianne	50 00	Nov. 1, 1905	
		12½		150 00		

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

MURRAY BAY—BAIE-ST. PAUL SECTION.

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		$ cts.		
1	Murray Bay	0	Mrs. F. Vincent			See North Shore section.
2	Guay	5½	Jos. Demeules, operator.	50 00	May 1, 1907	
3	St. Agnes	4½	Jos. Goudreau "	50 00	Mar. 1, 1905	
4	St. Hilarion	5	A. Bergeron "	50 00	Sept. 1, 1909	
5	St. Urbain	8½	A. Boivin "			See Chicoutimi section.
			M. Fortin, repairer			" "
6	Baie-St. Paul	9	F. Boivin, agent			" "
		32½		150 00		

BAIE-ST. PAUL—PETITE RIVIÉRE BRANCH.

1	Bay St. Paul	0	F. Boivin			See Baie St. Paul, Chicoutimi section.
2	Petite Rivière (St. François)	13	L. S. Bouchard	50 00	Dec. 1, 1903	Payment at Baie St. Paul, $25 a y. and $12 for battery care for operation of this branch to Petite Rivière.
		13		50 00		

BAIE-ST. PAUL—ST. PLACIDE BRANCH.

1	Baie-St. Paul	0	F, Boivin			See Baie St. Paul, Chicoutimi section.
2	St. Placide	8½	D. Simard	50 00	May 1, 1909	
		8½		50 00		

CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE TELEGRAPH SYSTEM.

Baie-St. Paul—Chicoutimi Section.

1	Baie-St. Paul	.....	F. Boivin	420 00 per annum†. 25 p. c. commission....	April 1,	1885....	Increase from $360, Sept. 1, 1909. *The commission on business is 25 per cent of the Government tolls of the line; the amount guaranteed to be not less than $50 per annum.
2	St. Urbain	9	A. Boivin Michel Fortin, rep'rer..	50 00 or commission.. 360 per annum.....	April 1,	1885....	Increase from $270, July 1, 1909,
3	La Galette	37	S. Ouellette	150 00 or commission..	Aug. 25,	1902....	Salary increased to $150 per annum, June 1, 1907. Plus $25 per year for operating branch line to L'Anse St. Jean
4	Ferland	27½	.....	.....	.....	.....	Ferland office closed, July 1st, 1911.
5	St. Alexis	10	Mrs. D. Simard	75 00 or commission..	Nov. 1,	1899....	
6	St. Alphonse de Bagotville	3	Mrs. C. Levesque	150 00 per annum.....	June 1,	1906....	J. Fortin's division includes the branch line to L'Anse St. Jean.
7	Chicoutimi	11½					
		98		1,205 00			†Salary increased to $360 per annum, June 1, 1907.
	Branch Line.						
	St. Alexis	0	Mrs. D. Simard	75 00	Jan. 1,	1912....	P. V. Lavoie resigned Oct. 1, 1911.
8	St. Felix d'Otis	10	A. Gaudreault	50 00	Nov. 1,	1907....	
9	L'Anse St. Jean	30	Eris Degagné, rep'rer.	350 00	Sept. 1,	1903....	
10	Petite Saguenay	8	M. Tremblay	50 00	Feb. 1,	1905....	(This office has been closed since April 30, 1904).
11	Anse Cheval	6	Jos. Degagné	50 00			
12	St. Etienne	7					
	St. Catherine Bay	17	G. Boulienne (see North Shore W. B. Line)				
		78		575 00			
	Total	176		1,830 00			

North Shore (West of Bersimis).

1	Murray Bay	0	Mrs. F. Vincent, operator	50 00 or commission..	April 1,	1885....	Plus $25 per year, and $12 for battery care for operation of branch to Guay).
2	Cap à l'Aigle	4	Miss S. Bergeron, operat.	50 00 " ..	June 1,	1905....	
3	St. Fidèle	6	Jos. Desbiens, operator..	50 00 " ..	Dec. 1,	1904....	
4	Port au Persil	7	J. A. Brassard, operator. A. Brassard, repairer....	50 00 " .. 360 00	May 1, June 1,	1889.... 1887...	
5	Cap Saumon Light (Loop from St. Siméon)	2	Delph. Bouchard, operat.	50 00 or commission..	April 1,	1910....	
6	St. Siméon	4	Johnny Tremblay	50 00 " ..	Aug. 1,	1907....	
7	Baie des Rochers	12	Mde. D. G. Savard, oper.	50 00 " ..	June —,	1887....	
8	St. Catherines Bay	18	G. Boulianne, repairer... Mde. D. Boulianne, oper.	420 00 240 00	Nov. —,	1886....	Salary increased to $420 March. 1, 1912.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE TELEGRAPH SYSTEM—*Continued.*

North Shore (West of Bersimis)—*Continued.*

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		$ cts.		
9	Tadousac (1½ knot cable)	1½	J. E. Caron, operator	360 00	Nov. 1, 1888	
10	Bergeronnes	10	Mde. M. Savard, operat.	50 00 or commission	April —, 1885	
11	Bon Désir	5	Mde. E. Gauthier, oper.	50 00 "	Aug. 1, 1904	
12	Escoumains	12	J. H. Topping, operator.	50 00 "	Aug. 1, 1885	
13	Baie des Bacons	8	P. Bouchard, operator		May 6, 1902	Commission 25 per cent without guarantee.
14	Sault au Mouton	6	C. E. Nolet, operator	50 00 or commission	Nov. 1, 1906	
15	Mille Vaches	2	Mde. L. Puize, operator.	50 00 "	Aug. 1, 1907	
16	Portneuf	11½	Leandre Bouchard, oper.	50 00 "	July 1, 1890	
			E. Courbron, repairer	420 00	April 1, 1888	
17	Hamilton Cove	1	Albert Topping, operat.	25 p.c. commission	Sept. 1, 1903	Accommodation office.
18	Sault au Cochon	7				Closed Sept. 30, 1896.
19	Bersimis West	31	Mrs. F. Miller, operator.	50 00 or commission		
			E. Pope, Dist. Supt.	2,400 00	April 1, 1885	Including general accounting, and supervision of stores at Quebec.
	Total	148		4,900 00		

* Note.—In the estimates, the maintenance of the Chicoutimi and North Shore line is provided under head of North Shore Line. They are operated conjointly.

North Shore (East of Bersimis).

1	Bersimis East	5	A. Maloney, agent	550 00	Sept. 21 1896	
			Mrs. A. Maloney asst opr.	200 00	July 1 1906	Repeating office and 2 main batteries.
			Jos. Gagnon, repairer	420 00	Aug. 12 1906	Plus 50 cents per day when absent on duty.
2	Point aux Outardes	29	Miss G. Ross, operator	50 00 or commission	Jan. 1 1910	
			D. Malouin, repairer	420 00	June 14 1907	Plus 50 cents per day when absent on duty.
3	Point Paradis	18				
4	Manicouagan	14	P. Martel and his son	25 p.c. commission	Sept. 26 1910	
5	Mistassini	22	W. Montreuil, operator lineman	420 00	Oct. 23 1908	Plus 50 cents per day when absent on duty.
6	River Godbout	26	N. A. Comeau	50 00 or commission	Oct. 15 1885	

7	River Godbout, East	½	T. Comeau, op'r	50 00	"				Accommodation. No commission paid.
8	Point des Monts	18½	Victor Faffard	50 00	"	Dec.	28	1883	
9	Trinity Bay West	5½	Jos Poulin	50 00	"	May	16	1884	
10	Trinity Bay East	2½	A. Bilodeau	25 p.c. commission		May	1	1889	
11	Caribou Island	7	Mrs. E. Chouinard	25	"	Oct.	19	1905	
12	Egg Island Light	8½	T. Pelletier	Accommodation					No commission paid. Telephone only with Pentecost office.
		2							
13	Pentecost	6½	Jos. Picard	310 00 per annum		Sept.	20	1911	Main battery.
14	May Islands	9	Mrs. P. Fournier	25 p.c. commission		Jan.	1	1909	Closed on 15 Nov. 10, and until end of April, 11.
15	Ste. Marguerite	38½	A. Therriault	180 00 per annum		July	1	1888	Also as line repairer for 40 miles from Hall to Rock Rivers.
16	Clark City	5	North Shore Power, Railway and Navigation Company	25 p.c. commission		April	17	1903	
17	Seven Islands	17¾	P. E. Vignault, agent	180 00 and 25 p.c. com.		Jan.	2	1884	Also see to small repairs when trouble between Hall and Moisie Rivers.
	"		P.C. Vignault, Chf. Opr.	540 00		Jan.	12	1912	Plus 50 cents per day when absent on duty.
	"		F. Gallienne, Gnl. Rpr.	540 00		Jan.	12	1912	Plus 50 cents per day when absent on duty.
18	Moisie West	14½	Mrs. Chicoine, operator	50 00 or commission		June	1	1906	
19	Moisie East	1	Holliday Bros	50 00					In operation during fishing season.
20	Pigou	28	Peter Wright, repairer	112 00		Oct.	1	1902	
			Mrs. P. Wright, op'r	100 00		Oct.	1	1902	
21	Riviere aux Graines	29	Miss A. Blaney, operator	50 00		Oct.	6	1910	Agt. M. Langlois, $12 a year for office rent.
22	Sheldrake	15	Mrs. A. Girard, op'r	50 00		Dec.	1	1904	Agt. A. Girard, $12 a year for office rent.
23	Thunder River	6½	Mrs. H. Cody, operator	50 00		Feb.	1	1890	$12 per month for care of main battery and $12 a year for office rent.
24	Magpie	14	Geo. Poirier, operator	50 00		Sept.	17	1905	Agt. G. Poirier, $12 a year for office rent.
25	St. John River	9	Ben Chambers, op'r	50 00		Oct.	1	1899	Agt. B. Chambers, $12 a year for office rent.
26	Long Point of Mingan	10	E. H. Tetu, Dist. Supt.	1,080 00		Nov.	1	1891	
			Mrs. E. H. Tetu, op'r	300 00		Nov.	1	1903	Repeating office for Anticosti cable in operation since Sept. 1, 1891. (3 main batteries) repeaters.
			J. V. Guay, agent	500 00		Nov.	1	1910	
			Asst. op	180 00					
27	Mingan	7	Mrs. C. Maloney, op'r	100 00					Salary increased to $100 per annum, March 31, 1907
28	Point Esquimaux	24	Mrs. E. Cyr, operator	240 00		Sept.	1	1897	Main battery. Plus 50 cents per day when absent on duty. Extra allowance at Esquimaux Point Telegraph, $48 a year for office rent; $40 a year for firewood; $24 a year for storage; 25 p.c. commission.
			E. Cyr, repairer	500 00		Nov.	2	1902	
									At Pt. Esquimault, Govt. Tel. supply agt. Alfred Landry, from Betchouan eastward, salary $60 per year.
29	Betchouanes	20	Jos. Picard, op'r and rep.	212 00		July	15	1904	Office closed since August 12, 1911. Agent transferred to Pentecoste.
30	Piastre Bay	23	Mrs. J. Beetz, operator	100 00		Sept.	18	1902	
			S. Tanguay, repairer	112 00		Sept.	18	1902	
31	Watichou	15	Mrs. Cl. Bourque, op'r	100 00		Dec.	1	1903	
			John Bourque, repairer	112 00		Dec.	1	1903	
32	Aguanus	21¾	Mrs. Galant, operator	100 00		Sept.	3	1902	
			S. Galant, repairer	112 00		Sept.	3	1902	

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE TELEGRAPH SYSTEM—*Continued.*

NORTH SHORE (East of Bersimis)—*Continued.*

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		$ cts.		
33	Natashquan	21	Miss Vignault, op'r	100 00	Sept. 5 1905	
			C. Vignault, repairer	112 00	Sept. 5 1902	Main battery $12 per year.
34	Kegaska	33	Miss Anderson, opr	100 00	Sept. 6 1902	
			Geo. Anderson, repairer	112 00	Sept. 6 1902	
35	Masquaro (Now at Harrington)	18	J. L. Osborne, insp	500 00	Nov. 6 1910	Plus 50 cents per day when absent on duty.
			Mrs. Jennis, operator	100 00	April 1 1906	
			Wm. Foreman, repairer	112 00	June 1 1903	
36	Romaine	25	Mrs. A. Guillemette, opr	100 00	Sept. 17 1902	
			M. Blais, repairer	112 00	Sept. 17 1902	
37	Wolf Bay	24	Mrs. R. Jones, operator	100 00	Nov. 26 1902	
			R. Jones, repairer	150 00	Nov. 26 1902	
38	Point au Maurier	24	Miss P. Galibois, opr	100 00	Sept. 19 1902	
			J. Galibois, repairer	112 00	Sept. 19 1902	
39	Harrington	20	Mrs. Jones, operator	100 00	Sept. 20 1902	Tel. allowance $25 per year for repeating messages with Harrington Island since June 15, 1909.
			J. Jones, repairer	112 00	Sept. 20 1902	
40	Whale Head	17	Amedee Vignault, operator and repairer	212 00		
41	Mutton Bay	20	Mrs. A. Landry, agt.-op.	444 00	Aug. 1 1911	
42	Baie de Ha. Ha	27	Mrs. J. Monger, opr	100 00	June 14 1904	
			J. Monger, repairer	112 00	June 14 1904	
43	St. Augustine	27	G. W. Burgess, rep. & opr	212 00	Sept. 25 1902	Hudson's Bay Co. post.
44	Chicatica Bay	24	Miss Esther Robin	100 00	June 30 1906	
			George Robin	112 00	June 30 1906	
45	Rocky Bay	15	James Kennedy, opr and repairer	212 00	July 27 1911	
46	Old Fort Bay	15	J. Fequet & son William	25 p.c. commission	March 29 1911	
47	Bonne Esperance	7	G. Chevalier, repairer	112 00	Oct. 2 1902	
			Miss Chevalier, opr	110 00	Oct. 2 1902	
48	Brador Bay	29		112 00		J. Jones retaking charge Oct. 27, 1910, as opr. and sent his resignation for 1st April, 1911.
			Cyrille Joncas, repairer	110 00	Oct. 10, 1909	
			A. Cormier, gen. rep.	500 00	Aug. 16, 1910	Plus 50 cents when absent on duty.
49	Long Pt. of Blanc Sablon	3	" agent	25 p.c. commission	Sept. 1, 1911	
50	Blanc Sablon	3	Thos. Morel, operator	212 00	Oct. 1, 1902	
51	Forteau Bay	13	A. Hart, rep. and oper	212 00	July 19, 1902	

52	Pointe Amour	17	Thos. Whyatt, rep. and operator.	112 00	Feb. 17, 1903	Main battery removed from West St. Modeste to Pt. Amour on Oct. 5, 1909, allowance $50 per yr.
53	West St. Modeste	16	Jas. Bolger, rep. and opr.	212 00	Oct. 5, 1902	
54	Red Bay	13	Geo. Moore, repairer	112 00	Oct. 9, 1902	
			Miss Moore, operator	100 00	Oct. 9, 1902	
55	Chateau Bay	30				Closed Dec. 1, 1906.
56	Belle Isle	23¾				Cable removed June 18, 1909.
	Totals	951¼		13,678 00		

LINE REPAIRERS, SECTIONS AND MILEAGE—MURRAY BAY TO CHATEAU BAY.

		Mileage.
A. Brassard, repairer	Murray Bay to Baie des Rochers	33
G. Boulianne, repairer	Baie des Rochers to Bergeronnes	34½
G Boulianne, repairer	St. Catherines Bay to St. Etienne branch line	17
Ed. Courbron, repairer	Bergeronnes to Rivière Colombier (16 miles west of Bersimis)	67½
Jos. Gagnon, repairer	Rivière Colombier to West Crossing Rivière aux Outardes (24 miles east of Bersimis)	40
David Malouin, repairer	East Crossing of Rivière aux Outardes to English Bay (7 miles east of Manicouagan)	44
Wm. Montreuil, repairer	English Bay to St. Nicholas Harbour (14 miles west of Godbout)	27
N. A. Comeau, repairer	St. Nicholas Harbour to Pointe des Monts	32½
Francis Gallienne, gen. repairer	Pointe des Monts to Thunder River	196¼
Ed. Cyr, gen. repairer	Thunder River to Kegaska	197¾
J. L. Osborne, gen. repairer	Kegaska to St. Augustine	202
P. C. Vignault, gen. repairer	St. Augustine to Chateau Bay	199
		1,073½

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

GROSSE ISLE QUARANTINE TELEGRAPH SYSTEM.

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		$ cts.		
	Quebec	0	Great Northwestern Telegraph Co.	185 00		This amount is paid for supervision of the line, and covers rent of pole line from Quebec to L'Ange Gardien, for which $35 per annum is charged.
	L'Ange Gardien	13				
	Orleans Island (cable)	¾				
2	St. Pierre	4½	Joseph Ferland	50 00 or commission	Dec. 1, 1910	This commission is 25 p.c. of the Government line tariff in each instance, and guaranteed to amount to not less than $50 per annum.
3	St. Petronille	3¼	Desneiges Plante	50 00 "	Oct. 1, 1896	
4	St. Laurent	6½	M. Gobeil	120 00 and 25 per cent commission.	Sept. 15, 1888	
5	St. Jean	7	P. Pouliot, dist. supt	1,120 00 & 25 per cent commission	Nov. 1, 1907	For local agency. Dist. Supt. and repairer.
6	St. François	6¾	Helene Lemelin	50 00 or commission.	Oct. 1, 1907	
7	Isle Reaux (including 2 knots cable).	3¼				
	Isle Reaux (land line)	2½				
8	Grosse Isle quarantine office (including 2 knots cable).	3½	Miss Julia Legace	100 00 and 25 per cent commission.	June 1, 1906	$5 per month for messenger serv. in summer and $12 per annum allowed for care of main batt. at Grosse Isle.
	Quarantine telephone system, 2 wire line.	1¾				NOTE.—The telephone system on Grosse Isle since May, 1893, has comprised 1¾ miles of 2 wire line with 25 connections or stations.
	Grosse Isle to Crane Island (including 5 knots cable)	8	Hector Lavoie	50 00 or commission.	Feb. 1, 1912	
			Fenelon Pinchard	accommodation	" "	
			Olivier Gagne	"	" "	
9	Crane Island to Montmagny (cable).	5	Desiré Vezina	Signal Service Lighthouse	Sept. 1, 1909	Connection with the Bell Telephone System at Montmagny. Four stations on Crane Island.
	Loop Line (2 wires).		Mde. Irene Labbe	50 00 or commission	July 1, 1907	
10	St. François—St. François-Nord.	5				
11	St. Jean—Ste. Famille	5½				
	Totals	76¼		$ 1,775 00		

NOTE.—In addition to the above, there is included in the Quarantine Dist. Superintendency the undermentioned lines :—

	Telephone Lines.					
	Les Eboulements	0	.....	.....	.....	Leased to the Charlevoix and Saguenay Telephone Company.
	Ile aux Coudres (cable)	3				
	On Ile aux Coudres	10				
		13				

ORLEANS ISLAND TELEPHONE LINE.

1	St. Pierre	0	Francis Côté	50 00 or commission	July 1, 1911	
2	Ste. Pétronille	3¼	Desneiges Plante	25 per cent of all receipts	April 1, 1911	Allowance of $6 per month for messenger service.
3	St. Laurent	6½	Alfred Turgeon	50 00 or commission	July 1, 1911	
4	St. Jean	7	Pierre Pouliot	50 00 "	Dec. 1, 1910	
5	St. François	6¾	Jos. Lepage	50 00 "	Dec. 1, 1910	Government line connects with the Bell Telephone Co.'s line at Ange Gardien. Exchange connections made at Ste. Pétronille.
6	St. François-Nord	5	Célestin Imbeau	50 00 "	Dec. 1, 1910	
	Branch.					
7	St. Jean—Ste-Famille	5½	Jos. Premont	50 00 "	Dec. 1, 1910	
		34	Pole line : 34 miles	Wire : 68 miles.		

BEAUPORT-LAVAL TELEPHONE LINE.

1	Beauport	0	Bell Telephone Co			Connection at Beauport with the Bell Telephone System.
2	Ste Thérèse	2	N. Bédard	25 p. c. commission	Jan. 1, 1912	
3	Vallière's Mill	5½	A. Vallière	50 p. c. commission	Feb. 1, 1910	
4	Laval	7½	Rev. E. Giroux	Accommodation		
5	Laval		Mrs. Touchette	25 p. c. commission	Feb. 1, 1910	*Commission is on Government line tolls only, and at Laval and Vallières Mill is guaranteed at the rate of $50 per year.
	Total	15				

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

BEAUPORT-LAVAL TELEPHONE LINE.

This line is under an agreement, operated in conjunction with the Bell Telephone Co., and is directly connected with the Central Exchange of Quebec. The tariff for conversations and messages is as hereunder:

BEAUPORT-LAVAL TELEPHONE LINE—TARIFF.

Local business between Beauport and Laval or intermediate points aside from the Telephone Exchange at Beauport, 10 cents for 3 minutes conversation and proportionate charge for any period in excess of 3 minutes, or for messages, 10 cents for 20 words and 3 cents for each additional 5 words or fraction thereof.

Exchange business between Quebec or Beauport and Laval or intermediate points for connections through the exchanges: 15 cents for 3 minutes conversation and proportionate charge for any period in excess of 3 minutes, or for messages, 15 cents for 20 words and 5 cents for each additional 5 words or fraction thereof.

Through business with points on the Bell Telephone Company's lines beyond Quebec, the above rate of 15 cents, &c., to be added to the company's established rates beyond Quebec.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

TIMISKAMING DISTRICT TELEPHONE LINES.

No.	Stations.	Intermediate Distance.	Agents.	Salaries per annum.	Date of Appointment.	Memorandum.
1	Kippewa Dam	0	J. A. Boisvert, Agent	25% Commission	May 20, 1911	
	Denis	14½				
2	Fabre	6	L, Valiquette, Agent	25% "	May 20, 1911	
3	Ville Marie	13	J. Samson, Agent	25% "	May 17, 1911	Resigned Sept. 15, 1911.
			Mrs. L. Lepage, Agent	25% "	Sept. 15, 1911	Guaranteed commission to $50 per annum.
			J. Dumulon, Supt. and General Repairer	$65.00 per month	Nov. 13, 1911	And expenses while out on repair work.
4	Lorrainville	5	N. Legault, Agent	25% Commission	Sept. 1, 1911	
5	St. Eugene	13½	J. Bedard, Agent	25% "	Sept. 1, 1911	
6	Camp "B"	7½				
7	Camp "A" Quinze Dam	½	P. Carriére, Agent	25% "	Mar. 1, 1912	Previous to March 1, 1912, office was in charge of Mr. G. B. Hull, Engineer in Charge Construction Quinze Dam.
8	Camp "C"	5				
9	North Timiskaming	13½	J. R. Monaghan, Agent	25% "	Aug. 1, 1911	$75 per year is paid Mr. Monaghan for office rent and Exchange Connection with Timiskaming Telephone Company's Line.
		78½				

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

ONTARIO—PELEE ISLAND TELEGRAPH SERVICE.

STATEMENT showing List of Offices, Operators or Agents, Commissions or Salaries, Summary of Messages exclusive of free messages. From March 31, 1911, to March 31, 1912.

No.	Stations.	Intermediate distance.	Agents and Operators.	Salaries per Annum.	Messages Sent.	Messages Rec'd.	Date of Appointment.	Memo.
	Mainland.							
	Dis't. Supt's. House	0	J. McR. Selkirk, Dist. Supt.	$50 00 per annum				Private Instrument.
	Leamington Office	0	J. McR. Selkirk, Dist. Supt.	Commission 20%	478	557	Nov. 1, 1888.	
	Leamington Office	2½	To Cable Landing (Mainland).				Aug. — 1901.	Near Leamington Dock.
	Mainland to Pelee Id	17¼	Cable to Island.				Nov. 1, 1888. / Aug. — 1901.	Near (Scudder) North Dock.
	Instruments on Island.							
	North Dock (Scudder)	0	C. B. Quick	Commission 25 p. c.	108	98	Nov. 1, 1888.	
	North Point Lighthouse	3	J. R. Lidwell	" "	2	1	June 1, 1899.	
	Station 31 (Store)	¼	A. M. McCormick & Son	" "	20	8	Oct. 28, 1909.	
	Ouellette's	1¾	A. J. Ouellette	" "	66	29	June 19, 1908.	
	Pelee Club	0	Pelee Club (Island)	Accommodation Office	43	66	May — 1910.	Private Instrument. Pays for messages to Leamington Office.
	W. J. McCormick		W. J. McCormick	" "				Private Instrument.
	Hotel (Station 32)	2¾	Mrs R. Little	Commission 25 p. c.	56	40	April 9, 1909.	
	Dr H. O. Van Epp		Dr H. O. Van Epp	Accommodation Office			April 9, 1909.	
	West Dock	¼	A. M. McCormick	Commission 25 p. c.	132	84	Nov. 1, 1888.	
	Srigley or Grove Ave	3	Catharine Srigley	" "	32	31	Nov. 12, 1908.	
13	Pelee South	2	J. S. McCormick	" "	32	29	Aug. 1, 1904.	
	Mainland.							
14	Baird's House (Leamington)	2¾	A. Baird	" "	5	26	Nov. 2, 1904.	
15	Jackson & Moss	5	Jackson & Moss	" "	15	21	Mar. 25, 1910.	Near Old Club House Station.
16	Baird's House (Pt. Pelee)	2½	A. Baird	Accommodation Office			June 23, 1909.	
17	Tilden's	¼	W. Tilden	Commission 25 p. c.	14	18	April 29, 1905.	
18	Point Pelee	2½	W. A. Grubb	" "	32	27	Nov. 1, 1888.	
		45¾			1,035	1,035		

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

NORTHWEST TELEGRAPH LINES.

QU'APPELLE—EDMONTON SECTION.

No.	Stations.	Intermediate Miles.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
				$ cts.		
1	Qu'Appelle	0	E. P. Benoit	120 00	Jan. 1, 1911	
2	Fort Qu'Appelle	17	P. R. Elmer	720 00	Aug. 15, 1906	
	Fort Qu'Appelle		D. Sutherland, Lineman	600 00	Dec. 1, 1909	
	To Loop	10				
3	Lipton	1	Can. Pac. Ry. Co.	10 p.c. comm.	May 1, 1906	Agent joint with C.P.R.
	To Main Line	1				
4	Kutawa	45	A. Von Lindeburgh	720 00	Nov. 1, 1883	
5	South Humboldt	78	H. J. Macdonald	720 00	Feb. 1, 1904	
	To Loop	55				C.P.R. handled business till April 30, 1911.
6	Saskat on	14	C. Webster	900 00	June 27, 1910	J. L. Osborne resigned.
	Saskatoon		G. T. Clement, Lineman	900 00	Oct. 16, 1903	Salary increased Aug. 1, 1911.
	Saskatoon		C.P.R. Messenger	120 00	May 1, 1911	
	To Main Line	14				
7	Henrietta	38	W. J. Salsbury	720 00	Oct. 1, 1886	
8	Battleford	47	J. D. Noel	720 00	Oct. 1, 1900	
	Battleford		H. C. Rogers, Lineman	720 00	Oct. 10, 1911	J. T. Dewan, resigned.
	Battleford		H. Gibson, Messenger	240 00	April 1, 1911	
9	Bresaylor	27	J. T. Callahan	720 00	Dec. 1, 1900	
	To Loop	63				At Old Fort Pitt.
10	Lloydminster	29	A. Bowtell	720 00	Dec. 1, 1907	
	Lloydminster		G. G. Mann, Lineman	720 00	Aug. 1, 1902	
	To Main Line	29				At Old Fort Pitt.
11	Onion Lake	13	H. McCleneghan	720 00	Aug. 1, 1899	
12	Frog Lake	23	E. A. Bowtell	600 00	March 1, 1911	
13	Moose	12	J. A. MacCartney	720 00	June 1, 1909	
14	Elk Point	20	E. O. Boyd	25 p.c. comm.	April 1, 1910	
15	St. Paul de Metis	15	J. A. Gagnon	600 00	May 1, 1909	
16	Saddle Lake	18	J. W. Carroll	720 00	Sept. 1, 1900	Phone line from here to Industrial School, 6½ miles.
17	Pakan	36	R. McAdam	600 00	Feb. 1, 1905	Former Agent became McAdam by marriage.
	To Loop	5				
18	Andrew	5	L. Carey	600 00	Nov. 15, 1910	B. Carey, resigned.
	Andrew		C. Norn, Lineman	600 00	Mar. 15, 1906	

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

NORTHWEST TELEGRAPH LINES—*Continued.*

QU'APPELLE—EDMONTON SECTION.

No.	Stations.	Intermediate Miles.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
				$ cts.		
19	Whitford	7	Postmaster	25 p.c. comm.	July 1, 1905	Branch line to Whithford operated by telephone.
	Andrew to Main Line	5				
	To Loop	20				
20	Lamont	3½	J. M. Royer	720 00	Nov. 23, 1911	L. Carey transferred to Andrew.
	To Main Line	3½				
21	Fort Saskatchewan	24	A. W. M. Campbell	720 00	Aug. 1, 1898	
22	Edmonton	18	G. Wilder	900 00	Dec. 1, 1908	
	Edmonton		A. Duplessis, Messenger	300 00	Sept. 22, 1911	L. Hooper, resigned.
	Edmonton		H. Hunt, Clerk	900 00	Jan. 22, 1912	
	Edmonton		J. H. Young, Lineman	720 00	Mar. 27, 1912	H. Hunt former lineman working in Supt. Office.
	Edmonton		R. C. Macdonald, Supt	2,300 00	Oct. 1, 1905	Salary increased to $2,300 April 1911.
	Edmonton		J. S. Macdonald	2,400 00	June 1, 1905	Salary increased to $2,400 April 1911.
		696		23,480 00		

EDMONTON—PEACE RIVER SECTION.

	Edmonton	0	Preceding Table			
1	Halfway Lake	49	Jesse Egge	25 p.c. comm.	Jan. 1, 1910	
2	Athabaska Landing	49	Jas. McKernan	720 00	Oct. 1, 1904	Salary increased May 1, 1911.
	Athabaska Landing		J. Minns, Lineman	900 00	April 1, 1911	S. Ibbotson, resigned 1912.
3	Mirror Landing	70	J. A. Jacques	900 00	Feb. 20, 1912	R. White, Agent from July 15 to Dec. 3, resigned.
4	Sawridge	38	C. J. Schurter	900 00	Oct. 7, 1910	
5	Grouard	78	V. F. Macleod	900 00	July 25, 1911	J. A. Hamelin transferred to Gravelburg.
	Grouard		H. Hunter, Lineman	900 00	Nov. 1, 1910	Transferred from Peace River.
	Grouard		G. E. MacLeod, Chief Lineman	900 00	Nov. 6, 1906	Chief Lineman and Foreman of construction on Grande Prairie Line.

QU'APPELLE—EDMONTON SECTION.

6	Peace River	83	P. Gauvreau	900 00	Oct. 16, 1911	G. E. Macleod on construct'n.
	Peace River		C. Banford, Lineman	900 00	Jan. 28, 1912	H. Hunter transferred to Grouard.
7	Dunvegan	72	N. Coleman	900 00	Mar. 28, 1912	New Office.
	Dunvegan		R. Harvey	900 00	Feb. 13, 1912	
		439		9,720 00		

WOOD MOUNTAIN LINE.

1	Moose Jaw	0	J. Lovelace	900 00	May 1, 1911	C. P. R. handled business till April 30, 1911, then our own Agent was appointed.
	Moose Jaw		C.P.R. Messenger	120 00	July 1, 1911	New appointment.
	Moose Jaw		C.P.R. Battery Service	120 00	Feb. 1, 1912	H. Sikes resigned.
2	Expanse	38	A. S. Macdonal	25 p.c. Comm.	Feb. 26, 1912	New Office.
	Expanse		J. Gagnon, Lineman	720 00	Jan. 27, 1912	
	To loop	10				
3	Gravelburg	21	J. A. Hamelin	900 00	Sept. 8, 1910	J. L. Osborne transferred to Saskatoon.
	To Main Line	21				
4	Limerick	16	E. R. Lossing	720 00	Dec. 1, 1908	
5	Wood Mountain	30	J. H. Thomson	720 00	Dec. 1, 1890	
	Wood Mountain		F. Brown, Lineman	720 00	Nov. 1, 1905	
6	Elm Springs	10	J. Thomson	25 p.c. Comm.		
7	Willow	30	M. A. Noel	720 00	Oct. 19, 1904	
		176		5,640 00		

BATOCHE—DUCK LAKE LINE.

1	Batoche	0	D. H. Grant	120 00	Oct. 1, 1902	
2	Duck Lake	9	C. A. Baker	120 00	July 1, 1911	W. J. Ronstadt resigned.
		9		240 00		

GOVERNMENT TELEGRAPH SERVICE—*Continued*

BRANCH TELEPHONE LINES.

No.	Stations.	Intermediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Edmonton	0				This line was built in 1904 and is being operated from the Central Telephone Office in Edmonton.
1	Winterburn	8½				
2	Indian Agency	5½				
3	Spruce Grove	8				
4	Stony Plain Station	6½				
5	Stony Plain Centre	3½				
		32				
	Edmonton	0				This line has been in operation to St. Albert since 1887 and to Alexandria since 1902 and is operated from the Central Telephone office at Edmonton.
1	St Albert	9				
2	Raye	12				
3	Rivière-Qui-Barre	8				
4	Alexandre	5				
		34				

FILE HILLS LINE

1	Ft. Qu'Appelle	0				This line was built in 1908 for the convenience of the Department of Indian Affairs exclusively.
2	Lebret	4				
3	Balcarres	11				
4	File Hills Agency	13				
		28				

KAMSACK LINE.

1	Kamsack, C.N.R	0				This line was built in 1907 for the Department of Indian
2	Dr. Wallace's office	0				

3	Indian Agency	6½				Affairs. Kamsack is on the C. N. R. 100 miles N. E. of Fort Qu'Appelle and is in no way connected with the Governm't Telegraph line. This portion of the line was built in 1910.
4	St. Philip's Mission	5				
5	Hudson Bay Co. (Pelly)	7				
6	Keys Reserve	5½				
		24				

DUCK LAKE LINE.

1	Duck Lake, C.N.R	0				This line was built in 1902 for the use of the Department of Indian Affairs exclusively.
2	R.N.W.M.P	0½				
3	Indian Agency	3				
		3½				

SADDLE LAKE LINE.

	Saddle Lake	0				This line was built in 1900 for the use of the Department of Indian Affairs exclusively.
1	Industrial School	6½				
		6½				

PEACE RIVER—SHAFTESBURY LINE.

	Peace River Crossing	0				This line was built in 1911. These telephones were installed at a rental basis to the parties named at an annual charge of $15, conditionally that they are also intended for the use of the public when wishing to reach our Peace River office for which a charge of 10 cents will be made.
1	Collin's	3				
2	R. C. Mission	5				
3	English Church Mission	7				
		15				

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

TELEPHONE LINES IN BRITISH COLUMBIA.

No.	Stations.	Intermediate Distance.	Agents, &c.	Positions.	Salaries per Annum.	Date of Appointment.	Memo.
	Kamloops—Okanagan Valley Line.	Miles.			$ cts.		
1	Kamloops		Aurore Genier	*Agent	600 00	Sept. 1, 1911.	
	"		Aurore Genier	For messenger	240 00	" 1, 1911.	
2		12		Agent	Commission		
3	Petersons	5	J. Bulman	"	"	July 1, 1909.	
4	McDonalds	5	W. R. McDonald	"	"	" 1, 1901.	
5	Stump Lake	4	J. Whitford	"	"	" 1, 1910.	
6	Rockford	4	Azela M. Palmer	"	"	Aug., 1911.	
7	Friskens	3	Jas. Frisken	"	"	June, 1905.	
8	Frasers	2	G. Fraser	"	"	" 1905.	
9	Moores	4	E. E. Wilkinson	"	"	" 1910.	
10	Guichons	9	Jos. Guichon	"	"	July 1905.	
11	Quilchena	2	J. A. Guichon	"	"	May, 1907.	
12	Nicola	8	M. V. Munro	"	600 00	July, 1905.	
				Rent	120 00		
13	Merritt	7	A. F. Rankin	Agent	600 00	Oct., 1911.	
14	Coutlee	3	H. S. Cleasley	"	Commission	April, 1909.	
15	Lower Nicola	4	Mrs. R. M. Woodward	"	"	July, 1906.	
16	Canford	8		"			Projected extension.
17	Crowders	18	Frank Crowder	"	Commission	Oct., 1911.	
18	Aspen Grove	6	H. Turner	"	"	Nov., 1908.	
19	Hastings Ranch	7	McGill	"	"	June, 1911.	
20	Colletts Ranch	6	Wm. Cooper	"	"	" 1911.	
21	Otter Valley	12	J. G. Thymne	"	"	Oct., 1907.	
22	Tulameen	15	J. A. Schubert	"	"	Sept., 1911.	
23	Coalmont	6	Col'ia Coal & Coke Co.	"	"	1910.	Moved from G. Creek.
24	Granite Creek	3	F. P. Cook	"	"	Dec. 1, 1911.	Office re-opened.
25	Princeton	11	Alex. Bell	"	480 00	Aug., 1908.	
26	Hedley	25	F. M. Gillespie	"	480 00	" 1909.	
							Delivery office closed March 31, 1911.
27	Richters	20	F. Richters & Co.	"	Commission	Oct., 1908.	
28	Keremeos Station	3	H. N. Etcles	"	"	Jan., 1908.	
29	Fairview	18	S. J. McCuddy	"	"	July, 1909.	
30	Vasseaux Lake	9	Hazel Mackenzie	"	"	Nov., 1908.	
31	Okanagan Falls	6	W. B. Hine	"	"	Oct., 1908.	

32	Kaleden	6	A. S. Hatfield	"	"		1910.	
33	Marron Lake	8	W. Smythe Parker	"	"	Nov.,	1910.	
34	Penticton	10	Mrs. L. H. Layton	"	720 00	Oct.,	1907.	
35	Summerland	11	W. H. Hayes	"	Commission	July,	1906.	
36	Peachland	18	Candace McDougald	"	"	"	1906.	
37	Gellatlys	10	D. E. Gellatly	"	"	"	1906.	
38	Glen-Johnston	2	Hitchner Bros.	"	"	Oct.,	1911.	Spur from West Bank.
39	West Bank	5	Wm. G. Hewlett	"	"		1910	
40	Kelowna	2	Okanagan Tel. Co.	"	1,320 00	Feb., 1,	1912.	
				Rent, etc	312 00			Allowance for rent, messages and maintenance batteries.
41	Oyama	20	F. H. Aldreed	"	Commission		1911.	
42	Okanagan Centre	3	J. A. Gleed	"	"		1910.	
43	Vernon	15	Okanagan Tel. Co.	"	2,400 00	Jan.,	1911.	Including operating and messenger services, rent, etc., for local and transfer office.
44	Lumley (Branch)	17	Miss R. Morand	"	Commission	Dec.,	1907.	
	Vernon—Kelowna	74						
	Total	446	miles of wire; 372 miles of pole line.					

KAMLOOPS—VERNON SECTION.

No.	Stations.	Intermediate Distance.	Agents, &c.	Positions.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.					
1	Kamloops	0	Aurore Genier	Agent		Sept., 1911	
2	Rose Hill	7	Angus McKay	"	Commission.	Mar., 1911	
3	Barnhartvale	5	P. A. Barnhart	"	"	Jan., 1911	
4	Bowood	12	A. W. Duck	"	"	Nov., 1911	Spur from main line.
5	Ducks	4	H. F. Stewart	"	$5 month	" 1911	
6	Grand Prairie	17	E. W. Hoole	"	Commission.	July, 1911	
7	Slahaltkan	17	W. McClownie	"	"	Jan., 1911	
8	Glenemma	10		"	"		
9	Vernon	17	Ok. Telephone Co.	"	$2,400	Jan., 1911	Including rent, msgr. service, local and transfer office.
	Total	89					

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

BRITISH COLUMBIA—*Continued.*

LOCAL EXCHANGES IN OPERATION.

Place.	Number of Subscribers.	Rent Paid per Annum.		
		Business.	Dwellings.	General.
		$ cts.	$ cts.	$
Merritt	58	30 00	24 00	
Nicola	19	30 00	24 00	
Princeton	30	24 00	18 00	
Hedley	15	24 00	18 00	

Main line rates charged are given in Tariff section of Report.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

TELEPHONE LINES IN BRITISH COLUMBIA—*Continued.*

No.	Stations.	Intermediate Distance.	Agents, &c.	Positions.	Salaries per Annum.	Date of Appointment.	Memo.
	North Thompson River Line.	Miles.			$ cts.		
1	Kamloops		Aurore Genier	Agent		Sept., 1911	Entered in Okanagan Valley section
	"		"	Messenger		" 1911	
2	North Fruitlands	9	"	Agent	Commission.		Spur not yet completed.
3	Anderson's Ranch	4	F. W. Anderson	"	"	June, 1911	
4	Austin's Ranch	2	J. R. Connor	"	"	" 1911	
5	Hepley Creek	2	—. Williams	"	"	May, 1912	
6	Twenty-Mile House	6	J. Spratt	"	"	Jan., 1912	20 per cent commission of government line tolls.
7	Twenty-five Mile House	6	J. McCarten	"	"	Nov., 1908	
8	Louis Creek	10	Andre Goudreau	"	"	" 1908	
9	Barrier River	4	Geo. A. Borthwick	"	"	Apr., 1911	
10	Genier's	2	M. Genier	"	$25 per m.	Nov., 1910	
11	Chinook Cove	2	Malcolm White	"	Commission.	June, 1911	Spur 2 miles west side river
12	Chu Chua	12	Geo. Fennell	"	"	Nov., 1910	
13	Little Fort	7	H. Latrimoille	"	"	" 1910	
14	Aitkins	3					
	Total	69					

This line is operated on toll system ; the rates based on mileage in conjunction with the Okanagan Valley line.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

VANCOUVER ISLAND LINES.

VICTORIA AND CAPE BEALE SECTION (TELEGRAPH LINE.)

No.	Stations.	Name.	Position.	Salaries per Month or Commission.	Date of Appointment.	Remarks.
				$ cts.		
1	Victoria	J. McNeil	Agent	85 00	April 1, 1911	Vice Mr. Dee transferred to Superintendent's office.
2	Sooke	Isabella Milne	"	25% commission	" 1, 1911	Vice E. Milne resigned.
3	17 Mile Post, Sooke Rd	A. Gent	Line repairer	70 00	" 1, 1911	Vice E. Gordon resigned.
4	Otter Point	Mrs. K. Gordon	Agent	35 00	Oct. 1, 1908.	
5	Jordan River	J. N. MacVicar	Line repairer	70 00	June 1, 1909.	
6	Slide Hill	D. H. Soule	"	70 00	Feb. 1, 1911.	
7	Port Renfrew	Walter Spencer	Agent	55 00	March 22, 1911.	
		T. M. Baird	Line repairer	70 00	Nov. 1, 1908.	
8	Camp Bay	A. McLennan	"	70 00	Aug. 1, 1911	Vice E. Doyle resigned.
9	Carmanah	W. P. Daykin	Agent	35 00	Nov. 1, 1891.	
10	Clo-oose	J. Nutting	Line repairer	70 00	July 1, 1910.	
11	Darling	D. Logan	"	70 00	April 1, 1898.	
12	Banfield	G. M. Ross	Agent	35 00	Nov. 1, 1911	Vice F. C. Munn resigned.
		C. E. Mousley	Line repairer	70 00	Sept. 1, 1908.	

'Phones have been installed on this line for the use of Pachena Lighthouse, Life Saving Patrol Hut at Tsusiat and Seven Mile River, latter two places during winter months only. Agent, Mrs. Gordon, Otter Point; Line Repairer MacVicar, Jordan River; Line Repairer Soule, Slide Hill; Line Repairer Baird, Port Renfrew; Line Repairer McLennan, Camp Bay; Agent Daykin, Carmanah; Agent Spencer, Port Renfrew; Line Repairer Nutting, Clo-oose; Line Repairer Logan, Shelter Bight; Agent Ross, Banfield; and life saving trail camp (Marine and Fisheries Department); British Canadian Lumber Company, Port Renfrew, and Sombrio River Mining Company, Sombrio River, all supplied with 'phones on the usual subscribers terms of $36 per annum in addition to the regular tariff.

TELEPHONE CIRCUIT VICTORIA TO JORDAN RIVER.

13	Victoria	J. McNeil	Agent			See item No. 1.
14	Sooke Road	Sarah Gent	"	25% commission	June 1, 1911.	
15	Sooke	Isabella Milne	"	"	" 1, 1911.	
16	Sooke Wharf	J. H. Todd & Son.	Subscriber			
17	"	B. C. Packing Co.	"			
18	Scarfs	Oscar Scarf	Agent	25% commission	" 1, 1911.	
19	Otter Point	Mrs. K. Gordon	"			See item No. 4.
20	"	J. H. Todd & Son.	Subscriber			
21	"	B. C. Packing Co.	"			
22	Flea Bay	J. H. Todd & Son.	"			
23	Muir Creek	"	"			
24	Point No Point	B. C. Packing Co.	"			
25	"	Canadian Puget Sound Lumber Co.	"			
26	Jordan River	" "	"			
27	"	B. C. Packing Co.	"			
28	"	Mrs. J. N. MacVicar	Agent	25% commission	June 1, 1911.	

Subscribers pay $36 annual rental for 'phones in addition to regular tariff. Line Repairers Gent and MacVicar look after this line. This telephone circuit completed in May, 1911, gives direct connection to above offices with B. C. Telephone Co.'s city and district system in Victoria, also to any point in their long distance system in British Columbia.

ALBERNI AND CAPE BEALE SECTION.

29	Alberni	Mrs. P. A. Haslam	Agent	55 00	Dec. 1, 1902	$5 per month allowed for office rent.
30	"	D. Stone	Line repairer	70 00	Jan. 1, 1912	Vice T. Paterson transferred to Alberni-Parksville section and vice R. Erickson dismissed.
31	Port Alberni	E. B. Garrard	Agent	70 00	April 1, 1911	Vice A. E. Waterhouse resigned. $10 per month allowed for office rent.
32	Banfield	G. M. Ross	"	35 00	Nov. 1, 1911	Vice F. C. Munn resigned.
33	"	J. B. McKay	Line repairer	70 00	April 1, 1911	Formerly repaired by Can. Pac. Telegraph line repairers.

Branch line Banfield to Cape Beale and Life Saving Station, Banfield Creek, transferred to Marine and Fisheries Department to maintain, as the line is entirely for their service.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

VANCOUVER ISLAND LINES—*Continued.*

Alberni & Clayoquot Section.

No.	Stations.	Name.	Position.	Salaries.	Date of Appointment.	Remarks.
				$ cts.		
34	Alberni	Mrs. P. A. Haslam	Agent			See item No. 29.
35	Port Alberni	E. B. Garrard	"			See item No. 31.
36	Franklin Creek					Line crosses Alberni canal at this point by submarine cable.
37	Uchucklesit	J. Williams	Agent and line rep'r	70 00	1st July, 1910	Office now in Cannery Co'ys building. Government building occupied by line repairer as residence.
38	Toquart	J. E. Hillier	" "	75 00	16th Nov., 1908	Government own office building, occupied by line repairer as residence.
39	Ucluelet	H. J. Hillier	" "	70 00	1st Dec., 1902	$8.50 allowed for office rent.
40	Long Beach	Accommodation office				Point of connection from main line to branch lines.
41	Tofino	F. C. Garrard	Agent and line rep'r	70 00	1st April, 1911	Vice E. B. Garrard transferred to Port Alberni.
42	Stubbs Island	Accommodation office				Private cable connection for local firms.
	Branches:					
	Toquart-Sechart—					
43	Toquart	J. E. Hillier	Agent and line rep'r			
44	Sechart	Accommodation office				Whaling station.
	Tofino-Mosquito Harbour—					
45	Tofino	F. C. Garrard	Agent and line rep'r			
46	Mosquito Harbour	Accommodation office				Lumber and logging firm.
	Tofino - Clayoquot Sound—					
47	Tofino	F. C. Garrard	Agent and line rep'r			
48	Clayoquot Sound	Accommodation office				Clayoquot Sound Canning Co.

Branch line constructed to give connection to lifeboat station, coxswain's house and look-out station on Ucluelet Arm and Barklay Sound, transferred to Marine and Fisheries Department to maintain, as the line is entirely for their service.

Nanaimo-Comox-Campbell River Section.

49	Nanaimo	A. C. Cole	Agent	85 00	1st Oct., 1911	Vice J. A. Buchanan resigned and R. B. Reid dismissed.
50	Wellington	H. R. Parker	"	25% commission	1st March, 1911	
51	Nanoose	P. L. Good	"	" "	1st Sept., 1905	Closed.
52	Parksville	L. H. Bradbury	"	70 00	1st Aug., 1910	$6.00 per month allowed for office rent.
53	"	Wm. Mills	Line repairer	55 00	1st June, 1903	
54	French Creek	H. Pillar	Agent	25% commission		Closed.
55	Qualicum	Mrs. M. E. Crump	"	" "	1st Sept., 1906	Closed.
56	Union Bay	L. A. Lucas	"	70 00	1st Apr., 1911	Vice J. McNeil transferred to Victoria, and R. B. Reid to Nanaimo. Office accommodation supplied by Colliery Co'y until building destroyed by flood last February. Temporary office now is custom building.
57	Union Bay	Thos. Hudson	Line repairer	75 00	17th Nov., 1898	$10 per month allowed for horse hire.
58	Courtenay	John Aitken	Agent	70 00	1st Feb., 1912	Vice B. C. Telephone Co., resigned.
59	Comox	Mrs. M. Smith	"	55 00	1st Sept., 1911	Vice Miss B. Macdonald resigned. $5 per month allowed for office rent.
60	Oyster River	Miss B. Woodhus	"	25% commission	1st Apr., 1909	
61	Campbell River	A. M. Falconer	"	70 00	1st Sept., 1911	Vice S. A. Courtenay dismissed and F. H. Evans dismissed.
	Branches:					
	Parksville-Alberni—					
62	Parksville	L. H. Bradbury	Agent			See item No. 52.
63	"	Thos. Hirst	Line repairer	70 00	4th Febr'y, 1911	Previously repaired by C.P.R. line repairer.
64	Alberni	Mrs. P. A. Haslam	Agent			See item No. 29.
65	"	Thos. Paterson	Line repairer	70 00	1st June, 1911	T. Paterson transferred from Alberni and Clayoquot line vice J. F. Casey resigned.
	Comox-Cape Lazo—					
66	Comox	Mrs. M. Smith	Agent			See Item No. 59.
67	Cape Lazo Wireless station.	Govt. Wireless Operator.	"			To give land line connection to Wireless station. This line repaired locally when necessary, with general oversight by line repairer Thos. Hudson, Union Bay.
	Union Bay-Denman & Hornby Island.—					
68	Union Bay	L. A. Lucas	"			See Item No. 56.
69	Cable Landing, Denman Island.	Wesley Piercy	"	25% commission		This line is repaired locally when necessary with general oversight by line repairer Thos. Hudson, Union Bay.
70	Denman Island	Thomas Chalmers	"	25% commission		
71	Hornby Island	Thomas Smith	"	25% "		

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

VANCOUVER ISLAND LINES—*Continued.*

NANAIMO & GABRIOLA ISLAND SECTION.

No.	Stations.	Name.	Position.	Salaries.	Date of Appointment.	Remarks.
72	Nanaimo	B.C. Tele. Co.	Agent	25% commission	Feb. 1, 1909.	
73	Nanaimo Govt. Tele. Office.	A. C. Cole	"			See item No. 49.
74	Nanaimo River	J. Gordon	"	25% commission	Feb. 1, 1909.	
75	North Gabriola	R. Hoggan	"	25% "	Oct. 1, 1910.	
76	Centre Gabriola	E. Golightly	"	25% "	Dec. 1, 1911.	*Vice* J. Chapple, resigned, and *vice* Mrs. W. N. Shaw, resigned.
77	South Gabriola	J. Degnen	"	25% "	Feb. 1, 1909.	

CAMPBELL RIVER-TEXADA ISLAND SECTION.

78	Campbell River	A. M. Falconer	Telegraph agent	Commission		See Item No. 61.
79	Quathiaski Cove	W. Anderson	Telephone agent	25% commission	Nov. 1, 1910	
80	Heriot Bay	H. A. Bull	" "	25% "	" 1, 1910	
81	Bagots	A. F. Bagot	Line repairer		" 1, 1910	Phone installed for line use.
82	Hughes	J. Hughes	Test phone for line repairer.			
83	Mary Island	S. R. Marlatt	Phone agent and line repairer.	25% commission	" 1, 1910	" " "
84	Cortez Island	M. Manson	Phone agent	25% "	" 1, 1910	
85	Cortez Island	A. Hamarech	Line repairer		" 1, 1910	" " "
86	Lund, Mainland, B.C.	F. Thulin	Agent	25% "	" 1, 1910	
87	Lund, Mainland, B.C.	C. H. Franzen	Line repairer	$70.00	Feb. 1, 1911	Permanent line repairer.
88	Shannon	J. Brown	Agent	25% commission	Nov. 1, 1910	Closed.
89	Powell River	A. M. Oliver	"	$70.00	Feb. 10, 1911	
90	Blubber Bay) Texada	J. B. Fry	"	25% commission	" 10, 1911	Cable connection given Van Anda and Blubber Bay to Powell River, Dec., 1911.
91	Van Anda) Island	A. Deighton	"	25% "	" 10, 1911	
92	Van Anda	J. R. Fraser	Line repairer	25% "	" 10, 1911	Phone installed for line use.

Permanent line repairer, C. H. Franzen, headquarters at Lund, repairs line from Powell River to Sarah Point, 22 miles all on Mainland of British Columbia.
Land line on Valdez Island repaired by Line Repairer Bagot and paid only for time occupied executing repairs.
" Mary " " " Marlatt " " " "
" Cortez " " " A. Hamarech " " " "
" Texada " " " J. R. Fraser " " " "

	Wm. Dee	Clerk Supt. Office	$110.00	April 1, 1911	Transferred from Victoria Tele. Office.
	A. V. Porter	Line foreman	$100.00	June 1, 1911	Supplied with motor launch to travel between points making repairs to line and instrument.
	Malcolm Campbell	Engineer on launch	$70.00	June 1, 1911	

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

VANCOUVER ISLAND AND SALT SPRING ISLAND TELEPHONE LINE.

No.	Stations.	Name.	Position.	Salary per Annum.	Date of Appointment.	Remarks.
				$ cts.		
1	Duncan	D. Ford	Agent	25 p.c. commission	Jan. 1, 1911	Vice B.C. Telephone Company, resigned
2	Maple Bay	T. Aitken	"	" "	July 1, 1905	
3	Chisholms	A. Chisholm	"	" "	" 1, 1905	
4	South Salt Spring (Edwards)	R. P. Edwards	"	" "	March 1, 1902	
5	Beaver Point	A. G. Good	"	" "	Feb. 1, 1911	
6	Cushion Cove	Bulman-Allison Lbr. Co.	"	" "	July 1, 1908	
7	Horels	Jas. Horels	"	" "	Sept. 1, 1911	Office opened.
8	Ganges Harbour	G. J. Mouat & Co.	"	" "	July 1, 1905	
9	South Pender	L. S. Higgs	"	" "	Oct. 1, 1908	
10	Bedwell Harbour	Mrs. A. R. Spalding	"	" "	Nov. 1, 1908	
11	Browning Harbour	W. Brackett	"	" "	Jan. 1, 1908	
12	Hope Bay	J. W. Corbett	"	" "	Oct. 1, 1911	Vice Mrs. Auchterlonie, resigned.
13	Village Bay	A. Deacon	"	" "	Dec. 1, 1908	
14	Mayne Isd. Hotel	C. J. Macdonald	"	" "	" 1, 1908	
15	Active Pass Lighthouse	G. Georgeson	"	" "	" 1, 1908	This office formerly known as Point Comfort Lighthouse, name changed at request of Marine and Fisheries Dept.
16	Galiano Island	Burrill Bros.	"	" "	" 1, 1908	This office closed temporarily pending arrival of another stretch of cable, former cable having been broken by strong currents, &c.

Repairs made to the land lines on the various sections as under, only actual time occupied in making repairs is paid for.
Mainland of Vancouver Island :—Duncan's to Sanson Narrows, A. Chisholm, line repairer.
Salt Spring Island :—Sanson Narrows to Ganges and Beaver Point, Jas. Horel, line repairer.
Pender Island :—South Pender, L. S. Higgs; North Pender, P. W. Garrett, line repairers.
Mayne Island :—Cable landing to Active Pass Lighthouse, A. Deacon, line repairer.

SIDNEY AND SIDNEY ISLAND TELEPHONE LINE.

1	Sidney	B. C. Telephone Co.	Agent	25 p.c. commission	July 1, 1910	
2	Sidney Island	Mrs. B. K. Byers	"	" "	Dec. 1, 1911	Vice Wm. Dorgan, resigned.

GOLDEN AND WINDERMERE TELEPHONE LINE.

1	Golden	0	Mrs. J. A. Buckham	Agent		55 00	Nov. 12, 1909	$10 per month allowed for office rent.
2	Rainbow	3	G. B. McDermott	Subscriber				
3	Government Road	5	Chas. Nickleson	"				
4	Canyon Creek	8	F. W. Jones	"				
5	McMurdo	13	T. R. Haddon	"				
6	Wapta	20	Kootenay Central Railway Co	"				
7	Beard Creek	23	G. E. Sanborn					Transferred from Hicks, 63 Mile Post.
8	McKeenans	30	R. McKeenan					Test Phone.
9	Camp	36	Kootenay Central Railway Co	Subscriber				
10	Spillumacheen	41	W. J. Barry	Agent			Aug. 1, 1908	
11	Heffners Ldg.	42	H. G. Low	Subscriber				
12	Brisco	47	W. P. Allsop	"				
13	"	50	H. Atchison	"				
14	"	50	A. H. Mitchell	"				
15	Hicks	63	Kootenay Central Railway Co	"				
16	Sinclair	66	E. Hoar	"				Closed and transferred to Wapta.
17	Wilmer	80	H. G. Macdonald	Acting Agent		55 00	Nov. 1, 1911	
18	Athalmer	84	Jas. Lake	Agent	25 p.c.	commission	Oct. 1, 1908	
19	Windermere	88	J. C. Pitts	"	"	"	July 1, 1904	
20	Invermere	89	G. A. Stark	Subscriber				

GOLDEN AND WINDERMERE TELEPHONE LINE—*Continued.*

Subscribers on Local Exchange in Golden—

Columbia Hotel.
Provincial Government Office.
C. A. Warren.
P. Burns.
Imperial Bank of Canada.
Russell House.
H. G. Parsons, Ltd.
McCormack House.
Henderson House.

Subscribers in and near Golden on main line between Golden and Wilmer—

Columbia Valley Irrigated Fruit Lands, Limited.
A. C. Hamilton.
Kootenay Central Railway Company's office.
Columbia River Lumber Company.

Subscribers on Local Exchange at Wilmer—

Columbia Valley Irrigated Fruit Lands, Limited.
Delphine Hotel.
Imperial Bank of Canada.

Subscribers at Athalmer—

Columbia House.
Livery Stables (Thos. Barry, prop.)
Windsor Hotel.
Columbia River Lumber Company.
Bank of Montreal.

Subscribers at or near Windermere—

Bruce Ranch, R. R. Bruce, prop.
Powell Ranch, Mrs. Amadi, prop.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

TOTAL NUMBER OF MILES OF LINES, &c., IN OPERATION AT MARCH 31, 1912.

Lines.	Miles.	Land Lines.	Cable.	No. of Offices.	No. of Operators.	No. of Line Repairers.	Messengers.
Vancouver Island Lines:							
Victoria and Cape Beale Section	118	118		6	6	8	1
Branch to Wireless Station	1½	1½					
Telephone circuit to Jordan River	45	45		6	6		
Alberni and Cape Beale Section	57	57		3	3	2	
Alberni and Clayoquot Section	97¾	96¾	1	7	6	5	
Sechart Branch	9½	9½				Half mile cable abandoned	
Mosquito Harbour Branch	10¼	10¼	¼				
Clayoquot Sound Branch	11½	11½					
Nanaimo-Comox-Campbell River Section	118	118		9	9	3	1
Cape Lazo Branch	6	6					
Parksville-Alberni Branch	30	30		1	1	2	
Denman-Hornby Island Branch	16	14	2	4	4	Repairs made locally	
Nanaimo and Gabriola Isd. Section	19	18¼	¾	5	5	" " "	
Campbell River-Texada Isd. Section	64½	47	17½	9	9	5, 1 permanent, 4 make repairs when necessary.	
Vancouver Island Lines Total	604¼	582¾	21½	50	49	25	2
Golden and Windermere Line	89	89		5	5	1	
Vancouver Island and Salt Spring Island	67	60	7	16	16	Repairs made locally	
Sidney and Sidney Island Line	5	2½	2½	2	2	" " "	
Grand Total	765¼	734¼	31	73	72	26	2

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

YUKON LINE.

Stations	Intermediate Distance.	Position.	Salaries per Month.	Tariff from Ashcroft.	Night Rate.	Memo.
	Miles.		$ cts.			
Vancouver		J. T. Phelan, superintendent	225 00			
		J. J. Healy, clerk	158 36			
		P. R. Quain, clerk	110 00			
		E. M. Keays, stenographer	91 66			
Ashcroft		C. E. Gooding, manager	110 00			40 p.c. of salary paid by C.P.R.
		R. A. Baylor, day operator	85 00			" " "
		W. D. Brine	80 00			" " "
		Hugh McMillan	85 00			" " "
Lillooet Branch—						
Pavilion	44	Commission office	50 p.c. T.L. tolls	50 & 3	30 & 2	
Lillooet	22	S. A. Macfarlane, opr. & l'man	60 00	"	"	$5 per month for rent, fuel and light.
Main Line.—*Con.*						
Dougherty's*	24	Commission office	25 p.c. T.L. tolls	25 & 2	25 & 1	
Clinton	10	E. LeBourdais, opr. & lineman	60 00	"	"	$5 per month for rent, fuel and light.
59 Mile House*	12	Commission office	25 p.c. T. L. tolls	"	"	
70 "	11	"	"	"	"	
74 "*	4	"	"	"	"	
83 "*	9	"	"	"	"	
100 "*	17	"	"	"	"	
105 "*	5	"	"	"	"	
115 "	10	G. T. Brown, opr. and lineman	60 00	"	"	
134 "*	19	Commission office	25 p.c. T.L. tolls.	"	"	
141 "*	7	"	"	"	"	
150 "	9	O. Landry, opr. and lineman	75 00	50 & 3	30 & 2	$5 per month for rent, fuel and light.
Horsefly Branch—						
Harpers Camp	33	A. J. Patenaude, opr. & l'man	60 00	"	"	$5 per month for rent, fuel and light.
Quesnel Forks	31	Grant Grinder, opr. & lineman	66 66	"	"	" " "
Hydraulic	25	Commission office	50 p.c. T.L. tolls	"	"	
158 Mile House*	8	Commission office	25 p.c. T. L. tolls	"	"	
Lynes*	11	"	"	"	"	

Soda Creek	9	D. Mitchell, opr. & lineman	75 00	"	"		
Packards *	7	Commission office	25 p.c. T.L. tolls	"	"		
Roweds	12	"	"	"	"		
Anders *	4	"	"	"	"		
Moffats *	5	"	"	"	"		
Windt's *	4	"	"	"	"		
Yorstons *	3	"	"	"	"		
Shepherds *	7	"	"	"	"		
Quesnel	14	J. H. Waller, operator	85 00	"	"		House, fuel and light, free
		H. T. Waller, messenger	30 00				
Barkerville Branch—							
Lockes *	13	Commission office	25 p.c. T. L. tolls	"			
Cottonwood *	8	"	"	"			
Wing Dam *	10	"	"	"			
Stanley *	14	"	"	"			
Barkerville *	16	T. F. Murphy, opr. & l'man	60 00	"			House, fuel and light, free,
Blackwater	42	S. J. Lawrence, operator	75 00	75 & 5			Provisions supplied.
		J. A. Bowles, lineman	70 00				" "
Bobtail Lake	37	R. A. Gooding, operator	75 00	75 & 5			" "
		M. L. Burnett, lineman	70 00				" "
Nechacco	32	W. J. Milne, operator	75 00	75 & 5			" "
		J. D. Charleson, lineman	70 00				" "
Fraser Lake	21	G. W. Proctor, operator	75 00	75 & 5			$1 per day' board allowance.
		Harry LeDuke, lineman	70 00				" " "
Burns Lake	55	H. D. Birdsall, operator	75 00	1 00 & 7			Provisions supplied.
		W. A. Gow, lineman	70 00				" "
South Bulkley	27	W. Mitchell, operator	75 00	1 00 & 7			" "
		W. N. Clark, lineman	70 00				" "
Aldermere	52	J. E. Lima, operator	75 00	1 25 & 10			" "
		Henry Fink	70 00				" "
Telkwa	2	Commission Office	25 p.c. T.L. tolls.	1 25 & 10			
Moricetown	28	John Muir, operator	75 00	1 25 & 10			" "
Hazelton	28	E. R. Cox, local manager	110 00	1 00 & 7			$1 per day' board allowance.
		W. W. Wrathall, night opr	100 00				" " "
		G. W. McKay, day operator	85 00				" " "
		John Wrathall, day operator	85 00				" " "
		F. M. Daniels, clerk and mgr.	100 00				
		J. A. Thorne, line foreman	100 00				$ 1 per day' board allowance.
Hazelton and Prince Rupert Branch—							
New Hazelton	4	C. J. Fraser, opr. and lineman	75 00	1 00 & 7			$25 per month' board allowance.
Shandilla	16	H. A. MacIsaac, opr. & l'man	75 00	1 25 & 10			" " "
Bostroms'	14	C. S. Fuller, opr. and lineman	75 00	" "			" " "
Cedarvale	7	Commission office	25 p.c. T.L. tolls.	" "			
McHugh's	3	H. P. Large, opr. and lineman	75 00	" "			" " "
Lorne Creek	10	A. J. Morrison, opr. and l'man	75 00	" "			" " "
Sheady's	10	J. C. Overbeck, opr. and l'man	75 00	" "			" " "
Hardscrabble	10	H. S. Cunningham, opr. & l'man	75 00	" "			" " "
Kitselas	10	W. W. Noonan, opr. & l'man	80 00	" "			" " "
Copper River	7	Commission office	25 p.c. T.L. tolls.	1 50 & 10			
Kitsum Kalum	8	M. R. Grimes, operator	75 00	" "			" " "
		George Minchin, lineman	70 00				" " "

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

YUKON LINE—*Continued.*

Stations.	Intermediate Distance.	Position.	Salaries per Month.	Tariff from Ashcroft.	Night Rate.	Memo.
			$ cts.			
Stewart Branch—						
Cedar River	35	F. D. Wilson, operator	75 00	1 50 & 10		Provisions supplied.
		R. H. A. Nielsen, lineman	70 00			" "
Aiyaush	32	L. A. Graef, opr. and lineman	75 00	2 00 & 15		$30 per month' board allowance.
Alice Arm	25	J. B. Rutledge, opr. and l'man	75 00	" "		" " "
Goose Bay	22	J. G. Bryden, opr. and l'man	75 00	" "		" " "
Stewart	57	H. B. Birch, opr. and l'man	110 00	" "		
Hazelton & P. R. Br.—*Con.*						
Graveyard Pt	15	P. R. Currie, opr. and lineman	75 00	1 50 & 10		$25 per month' board allowance.
Hole-in-Wall	15	S. A. Courtney, opr. & l'man	75 00	" "		" " "
McLeod's	8	Wm. Inthout " "	75 00	" "		" " " (closed Mar. 12, '12.)
Telegraph Point	9	V. F. Dunn " "	75 00	" "		" " "
Haysport	16	J. W. Ferguson " "	75 00	" "		" " "
Cassiar *	9	Accommodation office, Paul Wicks, lineman	80 00	" "		Telephone rental, $2.50 per month.
North Pacific *	10	" "		" "		" " "
Inverness *	2½	" "		" "		" " "
Prince Rupert	13½	F. W. Dowling, circuit mgr	150 00	1 00 & 7		
		L. W. Waugh, day operator	110 00			
		Jas M. Kelly, night operator	110 00			
		Wm. Blackstock, lineman	100 00			
		John Sherman, messenger	$1 per day			
Georgetown *	20	Commission office	25 p.c. T.L. tolls.	1 50 & 10		
Port Simpson *	10	Jas. Sharp, agent	30 00	" "		'Phone also installed at Port Simpson hospital; the residence of Dr. Kergin, Port Simpson, and office of Georgetown Sawmill Co.; rental, $2.50 per month.
Main Line—*Con.*						
Kispiox	16	Hugh Taylor, opr. & lineman	75 00	1 50 & 10		$30 per month, board allowance.
2nd Cabin	33	P. E. Smith, operator	75 00	"		Provisions supplied.
		J. D. Sullivan, lineman	70 00			"
3rd Cabin	25	Gordon Grasett, operator	75 00	1 50 & 10		"
		W. H. Blake, lineman	70 00			"

4th Cabin	20	J. J. Doré, operator	75 00	1 50 & 10		
		E. L. Kelly, lineman	70 00			
5th Cabin	20	R. A. Drake, operator	100 00	1 50 & 10		"
		C. E. Ellaby, lineman	$3 per day			"
6th Cabin	20	Jas. Mooney, operator	100 00	1 50 & 10		"
		J. R. Barker, lineman	$3 per day			"
7th Cabin	19	Rae Hamilton, operator	100 00	1 50 & 10		"
		W. P. McPhee, lineman	$3 per day			"
8th Cabin	19	Robert Todd, operator	100 00	1 50 & 10		"
		Leonard Mason, lineman	$3 per day			"
9th Cabin	17	G. W. Smith, operator	100 00	1 50 & 10		"
		Carl Jepsen, lineman	$3 per day			"
Echo Lake	32	W. S. Simpson, jr., operator	100 00	1 50 & 10		"
		C. W. Vance, lineman	$3 per day			"
25 Mile Cabin	25	Rod. MaKay, operator	100 00	1 75 & 10		"
		Joseph Williams, lineman	$3 per day			"
Iskoot	16	G. W. Hughes, operator	100 00	1 75 & 10		"
		Jos. W. Makemson, lineman	$3 per day			"
Telegraph Creek	61	A. S. Gillespie, operator	100 00	1 75 & 10		$1 per day, board allowance.
		A. J. Charleson, line foreman	150 00			" "
Shesley	45	Andrew Johnson, opr. & l'man	82 50	1 75 & 10		Provisions supplied.
Nahlin	61	J. T. Pilling, operator	82 50	2 00 & 15		"
		George Jeffrey, lineman	75 00			"
Nakina	49	Edward Barrett, opr. & l'man	82 50	2 00 & 15		"
Atlin	63	A. B. Taylor, local manager	116 66	2 00 & 15		$60 per month, board allowance.
		J. B. Watson, operator	100 00			" "
Tagish, Y.T	75	P. H. Moore, operator	82 50	2 25 & 15		Provisions supplied.
		G. J. Burnside, lineman	75 00			"
Carcross, Y.T.	18	S. E. Chambers, operator	82 50	2 25 & 15		$40 per month, board allowance.
White Horse, Y.T	65	H. Gilchen, district supt	210 00	2 50 & 15		
		G. S. Fleming, operator	155 00			
		Lyle Larsen, messenger	65 00			
Lower Laberge	59	G. C. Walker, opr. & lineman	82 50	2 50 & 15		Provisions supplied.
Hootalinqua	30	R. T. McDonald, opr. & l'man	82 50	2 50 & 15		"
Livingstone Creek Branch (Telephone Line only)—						
Mason's Landing	35	Commission Office	25 p.c. T.L. tolls	2 50 & 15		
Livingstone Creek	35	"	"	2 50 & 15		
Main Line—*Con.*						
Big Salmon	34	Jas. Withrow, operator	82 50	2 50 & 15		Provisions supplied.
		Henry Breaden, lineman	75 00			"
Yukon Crossing	38	R. C. Ewing, operator	82 50	2 75 & 15		"
		H. O. Lakken, lineman	75 00			"
Fort Selkirk	50	R. P. Hall, opr. & lineman	82 50	2 75 & 15		"
Coffee Creek	30	B. D. DeWitt, operator	82 50	2 75 & 15		"
		Angus Morrison, lineman	75 00			"
Stewart River	75	John O'Regan, opr. & lineman	82 50	2 75 & 15		"
Ogilvie	23	W. C. Fraser, opr. & lineman	82 50	3 00 & 20		"

GOVERNMENT TELEGRAPH SERVICE—*Concluded.*

YUKON LINE—*Concluded.*

Stations.	Intermediate Distance.	Position.	Salaries per Month.	Tariff from Ashcroft.	Night Rate.	Memo.
Main Line—*Con.*			$ cts.			
Dawson	48	Wm. Brownlow, local manager.	150 00	3 00 & 20		$100 per month, board allowance.
		Geo. A. McLachlan, operator.	125 00			" "
		J. P. Champagne, cashier	125 00			" "
		C. A. Couture, line foreman.	125 00			" "
		Wm. Mellish, messenger	$3 per day			
Forty Mile	55	W. Lafontaine, opr. & lineman.	82 50	3 25 & 20		Provisions supplied.
International Boundary	40	Connection made here with U.S. Govt. Alaskan Line.				

* Telephone Offices (on composite Telegraph and Telephone line).

YUKON TARIFFS.

The rates given above for points north of Quesnel are one-third less than those primarily adopted, which were calculated on the general basis of 50 cents for 100 miles and 25 cents for each additional 100 miles, counting the distance from Ashcroft.

Exceptional Rates.—Hazelton to Ashcroft 1·00 and 7, June 1, 1910; Prince Rupert to Ashcroft, 1·00 and 7, November 1, 1909.

The local rates between offices north of Quesnel are calculated on the basis of 50 cents for 100 miles and 25 cents for each additional 100 miles, and the local rates between offices north of Atlin are fixed at 50 cents for each 100 miles.

Cable Messages.—On transatlantic business, the word rate is twice as much as the additional word rate given in the list for all points north of Ashcroft-Barkerville, 3 x 2=6.; Dawson 20 x 2=40c. per word.

On transpacific business the word rate is the additional word rate plus 4c.; Barkerville, 3+4=7c.; Dawson, 20+4=24c. per word to or from Ashcroft.

Press Despatches.—For the Yukon line the rate is 1 cent per word, minimum charge, $1; this applies to the whole line. Exception, Barkerville-Ashcroft section (local), minimum charge 50 cents.

Yukon system connects at boundary with U.S. Sig. Service Telegraph System.
" " Ashcroft with Canadian Pacific Railway Telegraph.
" " Blackwater with Fort George and Alberta Telephone Company.
" " Carcross with W. P. and Y. Ry. Telegraph.
" " Quesnel Forks with Quesnel Hydraulic Co.'s line to Hydraulic.

GOVERNMENT TELEGRAPH LINES.

SPECIAL TARIFF.

Cable Messages.—Rates for cable messages passing over the Yukon line will be found in connection with the Yukon tariff in the preceding pages.

Elsewhere, the rate for transatlantic messages passing over the Government lines is the same as for ordinary through messages, excepting where the ordinary tariff is more than 25 cents; in such cases the Government line rate is 4 cents per word, with a minimum charge of 25 cents. For example:—

For a message of six words or less, the charge is 25 cents for Government lines.

For a message of seven words the charge is (7 x 4) 28 cents for Government lines.

For a message of twelve words the charge is (12 x 4) 48 cents for Government lines.

In every case the counting of words includes the address and signature in the same way as for transatlantic cable tolls.

Press Despatches.—The rate for press despatches on the Government lines (excepting the Yukon line), is 20 cents per 100 words; no single message less than 20 cents.

For the Yukon line the rate is 1 cent per word, minimum charge $1; this applies to the whole line. Exception, Barkerville-Ashcroft section (local), minimum charge 50 cents.

REGULAR TARIFF.

NOVA SCOTIA.

Lines in Cape Breton.

Local rate between offices.. 25-1
Through rate, on business exchanged with the Western Union Tel. to and from
North Sydney transfer office.. 15-1
Night messages are exchanged with the Western Union Telegraph Company for offices on these lines. Rate, 1 cent per word with minimum of 15 cents. The local night rate is 1 cent per word with minimum of 25 cents.

Line from Barrington to Cape Sable—Local rate, 12-1.

Newellton.. .. ..Through rate 12-1 from Barrington, W.U. office.
Cape Sable Lighthouse.. .. .. " " "

This line is now operated by the local telephone company. Terms of lease provide for former telegraph rate as above not being exceeded.

NEW BRUNSWICK.

Line from Chatham to Point Escuminac.

Local rate between offices.. 25-1
Through rate, on business exchanged with the G.N.W. Tel. Co., to and from
Chatham transfer office.. 15-1

Bay of Fundy.

Line from Eastport, Me., to Campobello, Grand Manan, and Whitehead Islands—

Local rates between offices on Grand Manan and Whitehead Islands, 15-1; Grand Manan and Campobello Island, 25-2; The Islands and Eastport, Me., 25-2, W.U.O.

Through rate same as local rate on business exchanged with W. U. Tel. at
Eastport.. 25-2

*Where the tariff rate is entered as 25-1 or 25-2, &c., the meaning is that the rate is 25 cents for ten words and 1 cent or 2 cents for each additional word.

QUEBEC.

Anticosti Island.

Local rate between offices.. 25-1
Between offices on Anticosti Island and Gaspé.. 50-2
" " " on the North Shore St. Lawrence and Chicoutimi lines.. 50-2
Through rate, same as local rate on business exchanged with G.N.W. Tel. at
Gaspé.. 50-2

Magdalen Islands.

Local rate between offices.. 25-1
Between offices on Magdalen Islands and offices on Government lines on Cape Breton.. 50-2
Through rate, on business exchanged with Western Union Tel. at North Sydney same as local rate.. 50-2

St. Pauls Island.

Between St. Pauls Island and offices on Government lines in Cape Breton..... 50-2
Through rate to and from North Sydney on business exchanged with the W.U. Tel., same as local rate..... 50-2

North Shore St. Lawrence and Chicoutimi.

Local rate between offices within 100 miles apart..... 15-1
Between offices over 100 miles apart..... 25-1
Between offices on these lines and Anticosti via Long Point..... 50-2
Conjoint rate between offices on Government lines west of Bersimis and offices on the G.N.W. line as far as and including Quebec..... 25-2
Through rate on business exchanged with the G.NW. Tel. line for points beyond Quebec..... 25-1

NOTE.—The above lines connect with the G.N.W. Telegraph system at Chicoutimi and at Bay St. Paul and Murray Bay, but the checking of all through business exchanged with the company is done at Quebec.

Quarantine System.

Line from Quebec via Orleans Island and Isle aux Reaux.

Local rates between offices:—

Quebec and Grosse Isle..... 25-1
Quebec and Orleans Island and Isle Reaux..... 15-1
Orleans Island and Grosse Isle..... 25-1
Isle Reaux and Grosse Isle..... 15-1
On Orleans Island..... 15-1

Through rate same as local on business exchanged with G.N.W. Tel. at Quebec.

Orleans Island Telephone System.

Local rates between offices:—

	Conversations, 3 minutes.	Messages, 20 words & 5 words.
St. Petronelle and St. François and intermediate.....	5c.	5-2
Quebec exchange, St. François and intermediate.....	15c.	15-5

Through rate 5c. for Government line plus regular tolls of the Bell Telephone Co. for points beyond Quebec.

Beauport-Laval Line (Telephone).

Local rate between offices:—

	Conversations, 3 minutes.	Messages, 20 words & 5 words.
Beauport and Laval and intermediate.....	10	10-3
Quebec exchange and Laval and intermediate.....	15	15-5
Through rate to be added to the Bell Telephone Company's rate beyond Quebec.....	15	15-5

NOTE.—Of these 15c. tolls, $\frac{2}{3}$ goes to the company in each instance.

ONTARIO.

Pelee Island Line (Telephone).

Local rate between offices:—

On the mainland Leamington-Point Pelee	15-1
On the island	15-1
On the island and Leamington	25-1
Through rate on business exchanged with the G.N.W Tel. at Leamington	15-1

This line is operated by telephone in conjunction with the Bell Telephone Co. Charges for conversations being based on local tolls plus the regular tolls of the company beyond Leamington. (Local rates, 15c. or 25c. for 3 minutes conversation and proportionate charge for any period in excess of 3 minutes.)

NORTHWEST TERRITORIES—SASKATCHEWAN AND ALBERTA.

Qu'Appelle—Edmonton Line.

Local rates between offices within 12 miles apart	15-1
Between offices already reached by company's lines, excepting when the company's rate is higher	25-2
Between offices solely on Government line	35-2

Through rates, for business exchange with the connecting companies, same as the above local rates.

Edmonton-Athabaska Landing and Peace River Line.

Local rates between offices	25-2 to 60-4
Maximum charge between offices in the two divisions above and below Edmonton	60-4

(See tariff sheet accompanying report No. 8, 1911-12.)

Moosejaw—Wood Mountain Line.

Local rate between offices	25-2

Through rate the same.

BRITISH COLUMBIA.

Vancouver Island Lines.

Local rates between offices	25-2
Conjoint rate between offices on Government lines and C.P. Tel. lines on Vancouver Island	25-2
Through rate, business exchanged with Can. Pac. Tel. at Nanaimo and Victoria, same as local rate	25-2

Golden-Windermere Line (Telephone).

	Messages.
Local and *through* rate	25-2

Subscribers for telephones at $36 per year are exempt from above tolls for messages.

Salt Spring Island, Pender Island, &c. (Telephone).

Local rate—Conversations, 2 minutes	25c.
Each additional minute	15c.

Through rate—The above line connects with the B.C. Telephone Co. at Duncan Station. The company's tolls are added to the above rates on through business.

Conjoint rate—Between offices on the above islands and offices on the C.P. line, on Government line reached by the C.P. Tel. on Vancouver Island. 25-2

Kamloops-Okanagan Valley System (Telephone).

Local and through rates, 25c. to 60c., according to distances between offices 100 miles apart and over, in stretches of 50 miles:—

Where message rate is	25c.	for	10	words,	2c.	for extra words; convers'n	10c. p. min.
"	35c.	"	3c.	"	"	15c.	"
"	40c.	"	3c.	"	"	20c.	"
"	50c.	"	4c.	"	"	25c.	"
"	60c.	"	4c.	"	"	25c.	"

Minimum charge for message, 25c.; for conversation, 15c.

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GOVERNMENT TELEPHONE SYSTEM

SCHEDULE OF RATES ON MESSAGES ON THE KAMLOOPS-

	Aitkens.	Aspen Grove.	Barnhart Vale.	Barrier River.	Chinook Cove.	Chu Chua	Colletts.	Coutlee.	Daly.	Ducks.	Fairview.	Friskens	Gellatlys.	Geniers.	Glenemma	Grand Prairie.	Granite Creek.	Guichons.	Hastings Ranch.	Hedley.	Hefley Creek.	Jowseys.	Kaleden.	Kamloops.	Kelowna.
Aitkens		35	25	25	25	25	40	25	50	25	60	25	40	25	25	25	40	35	35	50	25	25	50	25	40
Andersons Ranch	25	25	25	25	25	25	25	25	40	25	40	25	35	25	25	25	35	35	25	40	25	25	40	25	35
Aspen Grove	35		25	35	35	35	25	25	25	25	35	25	35	35	35	35	25	25	25	25	25	25	25	25	40
Austnis Ranch	25	25	25	25	25	25	25	25	40	25	40	25	35	25	25	25	35	25	25	40	25	25	40	25	35
Barnhart Vale	25	25		25	25	25	25	25	40	25	40	25	35	25	25	25	35	25	25	40	25	25	30	25	35
Barrier River	25	35	25		25	25	35	35	40	25	50	25	40	25	35	25	40	25	35	40	25	25	50	25	40
Coalmont	40	25	35	40	40	40	25	25	25	35	25	25	35	40	40	40	25	25	25	25	35	35	25	35	35
Chinook Cove	25	35	25	25		25	35	35	40	25	50	25	40	25	35	25	40	25	35	40	25	25	50	25	40
Chu Chua	25	35	25	25	25		35	35	50	25	50	25	40	25	35	25	40	25	35	50	25	25	50	25	40
Colletts	40	25	25	35	35	35		25	25	35	25	25	35	35	35	35	25	25	25	25	25	35	35	25	40
Coutlee	25	25	25	35	35	35	25		25	25	35	25	40	35	35	35	25	25	25	25	25	25	35	25	40
Daly	50	25	40	40	40	50	25	25		40	25	35	25	40	40	40	25	35	25	25	35	40	25	40	35
Ducks	25	25	25	25	25	25	35	25	40		35	25	35	25	25	25	35	25	25	40	25	25	35	25	25
Fairview	60	35	40	50	50	50	25	35	25	35		40	25	50	35	35	25	35	35	25	40	40	25	40	25
Friskens	25	25	25	25	25	25	25	25	35	25	40		40	25	25	25	25	25	25	35	25	25	40	25	35
Gellatlys	40	35	35	40	40	40	35	40	35	35	25	40		40	25	25	35	40	35	35	35	35	25	35	25
Geniers	25	35	25	25	25	25	35	35	40	25	50	25	40		35	25	40	25	35	40	25	25	50	25	40
Glenemma	25	35	25	25	25	25	35	35	40	25	35	25	25	35		25	40	35	35	40	25	25	35	25	25
Glen Johnston	40	40	35	40	40	40	40	40	25	35	25	35	25	40	25	25	35	40	40	25	35	35	25	35	20
Grand Prairie	25	35	25	25	25	25	35	35	40	25	35	25	25	25	25		40	35	35	40	25	25	35	25	25
Granite Creek	40	25	35	40	40	40	25	25	25	35	25	25	35	40	40	40		25	25	25	35	35	25	35	35
Guichons	35	25	25	25	25	25	25	25	35	25	35	25	40	25	35	25	25		25	35	25	25	40	25	40
Hastings Ranch	35	25	25	35	35	35	25	25	25	25	35	25	35	35	35	35	25	25		25	25	25	40	25	40
Hedley	50	25	40	40	40	50	25	25	25	40	25	35	35	40	40	40	25	35	25		40	40	25	40	35
Hefley Creek	25	25	25	25	25	25	25	25	40	25	40	25	35	25	25	25	35	25	25	40		25	40	25	35
Jowseys	25	25	25	25	25	25	35	25	40	25	40	25	35	25	25	25	35	25	25	40	25		35	25	25
Kaleden	50	25	40	50	50	50	35	35	25	35	25	40	25	50	35	35	25	40	40	25	40	35		40	25
Kamloops	25	25	25	25	25	25	25	25	40	25	40	25	35	25	25	25	35	25	25	40	25	25	40		35
Kelowna	40	40	35	40	40	40	40	40	35	25	25	35	25	40	25	25	35	40	40	35	35	25	25	35	
Keremeos	50	35	40	50	50	50	25	35	25	40	25	35	25	50	35	40	25	35	35	25	40	40	25	40	25
Little Fort	25	35	25	25	25	25	40	25	50	25	60	25	40	25	25	25	40	35	35	50	25	25	50	25	40
Louis Creek	25	35	25	25	25	25	35	25	40	25	50	25	40	25	25	25	40	25	35	40	25	25	50	25	40
Lower Nicola	35	25	25	35	35	35	25	25	25	25	35	25	40	35	35	35	25	25	25	25	25	25	35	25	40
Lumby	40	40	25	35	35	35	40	40	35	25	25	35	25	35	25	25	40	35	40	35	35	25	25	25	25
Marron Lake	50	35	40	50	50	50	35	35	25	35	25	40	25	50	35	35	25	40	35	25	40	35	25	40	25
Merritt	35	25	25	35	35	35	25	25	25	25	35	25	35	35	35	35	25	25	25	25	25	25	40	25	40
Moores	25	25	25	25	25	25	25	25	35	25	40	25	40	25	25	25	25	25	25	35	25	25	40	25	40
Munros	35	25	35	35	35	35	25	25	25	25	35	25	40	35	35	35	25	25	25	25	25	25	35	25	40
McCarten's	25	25	25	25	25	25	25	25	40	25	40	25	35	25	25	25	35	25	25	40	25	25	40	25	35
McDonalds	25	25	25	25	25	25	25	25	35	25	40	25	35	25	25	25	25	25	25	35	25	25	40	25	35
McLeods	25	25	25	25	25	25	25	25	35	25	40	25	35	25	25	25	35	25	25	35	25	25	40	25	35
Nicola	35	25	25	25	25	35	25	25	25	25	35	25	40	25	35	25	25	25	25	25	25	25	40	25	40
North Fruitlands	25	25	25	25	25	25	25	25	40	25	40	25	35	25	25	25	35	25	25	40	25	25	40	25	35
Okanagan Centre	40	40	25	35	35	40	40	40	35	25	25	35	25	35	25	25	40	35	40	35	35	25	25	25	25
Okanagan Falls	50	35	40	50	50	50	35	35	25	35	25	40	25	50	35	35	25	40	35	25	40	40	25	40	25
Otter Valley	40	25	25	35	35	35	25	25	25	35	25	25	40	35	40	35	25	25	25	25	35	35	35	25	40
Oyama	40	50	25	35	35	35	40	40	35	25	25	35	25	35	25	25	40	35	40	35	35	25	25	25	25
Peachland	40	35	35	40	40	40	40	40	25	35	25	40	25	40	25	25	35	40	35	25	35	35	25	35	25
Penticton	50	35	35	40	40	50	35	40	25	35	25	40	25	40	25	35	35	40	35	25	40	35	25	40	25
Petersons	25	25	25	25	25	25	25	25	35	25	40	25	35	25	25	25	25	25	25	35	25	25	40	25	35
Princeton	40	25	35	40	40	40	25	25	25	40	25	25	35	40	40	40	25	25	25	25	35	35	25	35	35
Quilchena	35	25	25	25	25	25	25	25	35	25	35	25	40	25	35	25	25	25	25	35	25	25	40	20	40
Richters	50	25	40	50	50	50	25	35	25	40	25	35	25	50	35	40	25	35	25	25	40	40	25	40	35
Rockford	25	25	25	25	25	25	25	25	35	25	40	25	35	25	25	25	25	25	25	35	25	25	40	25	35
Rose Hill	25	25	25	25	25	25	25	25	40	25	40	25	35	25	25	25	35	25	25	40	25	25	40	25	35
Slahaltkan	35	35	25	25	25	35	35	35	40	25	35	25	25	25	25	25	40	25	40	40	25	25	35	25	25
Struthers	25	25	25	25	25	25	35	25	40	25	50	25	40	25	25	25	35	25	25	40	25	25	40	25	35
Stump Lake	25	25	25	25	25	25	25	25	35	25	40	25	35	25	25	25	25	25	25	35	25	25	40	35	35
Summerland	50	35	35	40	40	40	35	40	25	35	25	40	25	40	25	35	35	40	35	25	40	35	25	35	25
Tulameen	40	25	35	35	40	40	25	25	25	35	25	25	35	35	40	35	25	25	25	25	35	35	35	35	40
Vasseaux Lake	50	35	40	50	50	50	35	35	25	40	25	40	35	50	35	45	25	40	35	25	40	40	25	40	25
Vernon	35	40	25	35	35	35	40	35	35	25	35	35	25	35	25	25	40	35	35	35	25	25	25	25	25
Westbank	40	40	35	40	40	40	40	40	25	35	25	35	25	40	25	25	35	40	40	25	35	35	25	35	30

Where message rate is 25c. for 10 words, 2c. for extra words. Conversation 10c. per minute.
" " " 35c. " " " 3c. " " " " 15c. " "
" " " 40c. " " " 3c. " " " " 20c. " "

SESSIONAL PAPER No. 19

KAMLOOPS-OKANAGAN SYSTEM.

OKANAGAN SYSTEM OF GOVERNMENT TELEPHONES.

Keremeos	Little Fort.	Louis Creek.	Lower Nicola	Lumby	Marron Lake.	Merritt	Moores	Munros.	McDonalds.	McLeods.	Nicola.	Okanagan Centre.	Okanagan Falls.	Otter Valley.	Oyama.	Peachland.	Penticton.	Petersons.	Princeton.	Quilchena.	Richters.	Rose Hill.	Shalaltkan.	Struthers.	Stump Lake.	Summerland.	Tulameen.	Vasseaux Lake.	Vernon.	Westbank.
50	25	25	25	40	50	35	25	35	25	25	35	40	50	40	40	40	50	25	40	35	50	25	35	25	25	50	40	50	35	40
40	25	25	25	35	40	25	25	25	25	25	25	35	40	35	35	35	40	25	35	25	40	25	25	25	25	40	35	40	25	35
35	35	35	25	40	35	25	25	25	25	25	25	40	35	25	40	35	35	25	25	25	25	25	35	25	25	35	25	35	40	40
40	25	25	25	35	40	25	25	25	25	25	25	35	40	35	35	35	40	25	35	25	40	25	25	25	25	40	35	40	25	35
40	25	25	25	25	40	25	25	35	25	25	25	25	40	25	25	35	35	25	35	25	40	25	25	25	25	35	35	40	25	35
50	25	25	35	35	50	35	25	35	25	25	25	25	50	35	35	40	40	25	40	25	50	25	25	25	25	40	35	50	35	40
25	40	40	25	40	25	25	25	25	25	35	25	40	25	25	40	35	35	25	25	25	25	35	40	35	25	35	25	25	40	35
50	25	25	35	35	50	35	25	35	25	25	25	35	50	35	35	40	40	25	40	25	50	25	25	25	25	40	40	50	35	40
50	25	25	35	35	50	35	25	35	25	25	35	40	50	35	35	40	50	25	40	25	50	25	35	25	25	40	40	50	35	40
25	40	35	25	40	35	25	25	25	25	25	25	40	35	25	40	40	35	25	25	25	25	25	35	35	25	35	25	35	40	40
35	25	25	25	40	35	25	25	25	25	25	25	40	35	25	40	40	40	25	25	25	35	25	35	25	25	40	25	35	25	40
25	50	40	25	35	25	25	35	25	35	35	25	35	25	25	35	25	25	35	25	35	25	40	40	40	35	25	25	25	35	25
40	25	25	25	25	35	25	25	25	25	25	25	25	34	35	25	35	35	25	40	25	40	25	25	25	25	35	35	40	25	35
25	60	50	35	25	25	35	40	35	40	40	35	25	25	25	25	25	25	40	25	35	25	40	35	50	40	25	25	25	35	25
35	25	25	25	35	40	25	25	25	25	25	25	35	40	25	35	40	40	25	25	25	35	25	25	25	25	40	25	40	35	35
25	40	40	40	25	25	35	40	40	35	35	40	25	25	40	25	25	25	35	35	40	25	35	25	40	35	25	35	25	25	25
50	25	25	35	35	50	35	25	35	25	25	25	35	50	35	35	40	40	25	40	25	50	25	25	25	25	40	35	50	35	40
35	25	25	35	25	35	35	25	35	25	25	35	25	35	40	25	25	25	25	40	35	35	25	25	25	25	25	40	35	25	25
25	40	40	40	25	25	40	40	40	35	35	40	35	25	40	25	25	25	35	35	40	25	35	25	40	35	25	35	25	25	25
40	25	25	35	25	35	35	25	35	25	25	25	25	35	35	25	25	35	25	40	25	45	25	25	25	25	35	35	35	25	25
25	40	40	25	40	25	25	25	25	25	35	25	40	25	25	40	35	35	25	25	25	25	35	40	35	25	35	25	25	40	35
35	35	25	25	35	40	25	25	25	25	25	25	35	40	25	35	40	40	25	25	25	35	25	25	25	25	40	25	40	35	40
35	35	35	25	40	35	25	25	25	25	25	25	40	35	25	40	35	35	25	25	25	25	25	40	25	25	35	25	35	35	40
25	50	40	25	35	25	25	35	25	35	35	25	35	25	25	35	25	25	35	25	35	25	40	40	40	25	25	25	25	35	25
40	25	25	25	35	40	25	25	25	25	25	25	25	35	40	25	35	40	25	25	25	35	40	25	35	25	40	25	25	25	35
40	25	25	25	25	35	25	25	25	25	25	25	25	50	35	25	35	35	25	35	25	40	25	25	25	25	35	35	40	25	35
25	50	50	35	25	25	40	40	35	40	40	40	25	25	35	25	25	25	40	25	40	25	40	35	40	40	25	35	25	25	25
40	25	25	25	35	40	25	25	25	25	25	25	25	40	25	25	35	40	25	35	25	40	25	25	25	25	40	25	40	35	35
25	40	40	40	25	25	40	40	40	35	35	40	25	25	40	25	25	25	35	35	40	35	35	25	25	25	35	35	25	40	25
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25	40	40	40	25	25	40	40	40	35	35	40	25	25	40	25	25	25	35	35	40	25	35	25	40	35	25	35	25	25	

Where message rate is 50c. for 10 words, 4c. for extra words. Conversation 25c. per minute.
" " " 60c " " " 4c. " " " " 30c. " "
Minimum charge for message, 25c.; for conversation, 15c.

APPENDICES

GOVERNMENT TELEGRAPH SERVICES

ANNUAL REPORT FOR 1911-12.

Sectional reference (1) Cape Breton lines.
(2) Bay of Fundy lines.
(3) Magdalen Islands.
(4) Anticosti Island lines.
(5) North Shore, St. Lawrence and Chicoutimi.
(5a) North Shore, St. Lawrence, East of Bersimis.
(6) Quarantine Telegraph system.
(6a) Timiskaming District Telephone line.
(7) Pelee Island system.
(8) Northwest lines.
(9) " (Inspector).
(10) British Columbia lines.
(11) Kamloops-Penticton lines.
(12) Yukon Telegraphs.
(13) Cable ship *Tyrian*.

REPORT No. 1.—CAPE BRETON.

OFFICE OF THE DISTRICT SUPERINTENDENT,
ST. JOHN, N.B., July 9, 1912.

D. H. KEELEY, ESQ.,
General Superintendent,
Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—I beg to submit Annual Report for the fiscal year ended March 31, 1912, covering the Government Lines in Cape Breton, N.S., viz.—

	Miles in Operation.	No. of Offices.	No. of Operators.	No. of Repairers and Linemen.
At date of last report	684½	80	80	33
Added during the year	.....	3	3	.....
	684½	83	83	33

The lines, notwithstanding an unusually severe winter during 1910 and 1911, have given good service, interruptions being infrequent and of short duration, thus affording almost uninterrupted communication during the entire year to patrons, not only in the most congested parts, but those in the remote sections, the lines, as they do, forming a complete circuit of the Island, with extensions touching the islands off Port Hood, as well as at Scatterie, and also taking in the villages about Lake Ainslee and branching off at Grand River, caring for the settlements at Enon and Loch Lomond.

New Offices, viz.

Ferry Landing, N.S., opened on August 10, Miss Margaret McRitchie, agent and operator, salary 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annum.

Capsticks, C.B., office, opened on June 26, J. W. Capsticks, agent and operator, salary 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annum.

Gabarus Lake, C.B., office, opened on August 1, Mrs. Hugh McDonald, agent and operator, salary 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annunm.

Changes, &c.

Loch Lomond, N.S., office closed September 26, on account of Mrs. J. McK. Fraser, agent and operator, removing to Big Bras d'Or. Office re-opened November 1, Mr. A. Morrison appointed, salary same as before, viz.: 25 per cent of 'This Line' receipts and checks, guaranteed at $50 per year.

Neils Harbour, N.S., office transferred on February 1 last from A. A. Buchanan, agent and operator, to Archibald McLean. No change in salary, viz.: 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annum.

Mr. Buchanan resigned voluntarily on account of inability to care for the office on account of business and other duties, as well as being the representative of the Northern Section of Cape Breton county in the Local Legislature at Halifax.

Judique, N.S., transferred January 1, from Mrs. E. McDonald as agent and operator, who resigned on account of ill-health, succeeded by Miss Mary McDonald, salary same as before, viz.: 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annum.

Ross Ferry, N.S., office transferred October 1, from Miss Johanna Campbell, as agent and operator, to Mrs. J. F. McKenzie. No change in salary, viz.: 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annum.

Englishtown, C.B., office closed on December 2, William Bingham, agent and operator, salary $120 per annum, with allowance of $7 per year for heating, leaving the village to take up his residence at New Waterford, C.B., office re-opened on March 28 under same terms and conditions, with John D. McCaskill in charge.

The late agent, W. Bingham, after serving for over 30 years on the Government line, died suddenly at New Waterford, on January 8.

S.W. Margaree, N.S., Mr. D. D. McFarlane, agent and operator, superseded on January 1, by Mrs. Mary Collins, salary same as heretofore, 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annum.

Brooks Village, N.S., office transferred on March 1, from Miss Mary McDaniel to Miss Stella Jamieson, under same terms and conditions, viz.: 25 per cent of 'This Line' receipts and checks, guaranteed $50 per annum.

L'Ardoise, C.B., office closed on February 28, due to resignation of Mrs. E. Finlayson, agent and operator. P. E. Sampson appointed as successor, and office re-opened March 28. No change in salary, viz: 25 per cent of 'This Line' receipts and checks, guaranteed at $50 per annum.

At the close of the year, the offices at Englishtown, Brooks Village and L'Ardoise were in charge of instructors.

Increases, &c.

Grand River, N.S., Miss E. A. Finlayson, salary increased April 1, from $50 per annum, and 25 per cent receipts and checks, guaranteed $50 per year, to $120 per year, straight salary, in addition to 25 per cent of receipts and checks, guaranteed $50 per year. This increase was granted on account of Grand River office being called upon to relay the traffic from the Enon branch line, and also for caring for the main battery for same, which is located at that point.

Inverness, N.S., salary of Miss Cassie F. McLean, agent and operator, increased April 1, from $140 to $360 per annum; increase being granted to commensurate operator for handling the traffic, maintaining office from 8 a.m. to 8 p.m., daily, Sunday excepted.

Repairers, &c.

Alex. McFarlane, sr., station repairer, covering the section between South West Margaree and Margaree Harbour, taking in the loop to North East Margaree, died on January 31. New appointment made March 16, to John J. Miller, of Margaree Ford, salary $50 per annum.

John G. Chaisson, station repairer, covering the section between Cheticamp and the Barren, resigned on February 15, salary $50 per annum. Position unfilled at the close of the year.

A. A. Kennedy, of Inverness, general repairer, covering the section between Inverness and Meat Cove, was superseded on February 1 by Patrick A. Doyle, of the same place. No change in salary or terms of employment, viz: $40 per month, and allowance for horse hire and maintenance while out on the line.

Geo. E. Bissett, of St. Peters, general repairer, covering the section between Port Hawkesbury and Gabarus, was superseded on February 1 by Murdoch McRae. Salary same as before, viz: $40 per month, with allowance for team while out on the line.

Extensions.

On account of appointment of new agent at Englishtown, ¾ of a mile of poles were set, and 1½ miles of wire strung in January and February, to connect office with main line.

Reconstruction.

The only piece of work done under this caption was in the vicinity of Cape Rouge Mountain, north of Cheticamp, and leading to Pleasant Bay. Some 9¾ miles of poles were set caused by road diversion work started June 18, and finished August 10, under foremanship of A. A. Kennedy, of Inverness.

352 new poles were set, and new wire strung in.

The old poles, being of little value, were left after the wire had been taken down. This was a most difficult and tedious piece of work, nearly all the poles being placed in blasted holes, there being no proper holding ground for same over the rough and barren section covered.

General Notes.

On August 15, the office at Eastern Harbour, C.B., which was located in the general store of Mr. Chas. J. AuCoin, was destroyed by fire. Office was reopened in another location on August 23. All the instruments, records, &c., were destroyed, as well as $9.16 in cash, representing cash receipts up to date.

On account of the importance of North Sydney as a distributing point, Mr. R. Logue was, on October 1, made an annual allowance of $50 per year for storing and handling Government material at that point.

North Sydney, Boularderie section, in charge of general repairer Joseph Logue, was thoroughly overhauled, new poles set where necessary, and others reset, braced and straightened, slack wire pulled, and all thoroughly insulated.

In connection with this work, Charles Dickson, a temporary employee, sustained a fall from a pole in the vicinity of Boularderie Centre, on August 15, breaking his leg.

Hawkesbury, Grand River section, in charge of G. E. Bissett, general repairer. Construction work was done on this section the previous year, and as line was in fair shape to withstand the winter's storms, no extra work outside of straightening poles, &c., was done.

Sydney-Scatterie section, in charge of E. M. Dickson, general repairer. This section was thoroughly covered by general repairer the previous year, and was found to be in such condition that it could be safely carried along for another year without any extraordinary work being done thereon.

Big Bras d'Or-Meat Cove section, in charge of general repairer Sidney S. Burk. This section, which was in fair shape, and outside of minor resets, straightening and taking up slack wire, as well as thoroughly insulating same, no further general repair work was done.

Port Hastings-Whycocomagh-Inverness section, in charge of general repairer John F. McMillan. Nothing outside of regular patrolling, glassing up, &c., done on this section, line having been thoroughly overhauled the previous year.

Inverness-Meat Cove section, in charge of A. A. Kennedy, general repairer. On account of this repairer being detailed on reconstruction work during the favourable months when work is done, no general work was done on this section, as it was found to be in good condition, having been thoroughly overhauled the previous year, when some 800 new poles were set.

Respectfully submitted,

D. C. DAWSON,

Superintendent.

REPORT No. 2.—BAY OF FUNDY.

OFFICE OF THE DISTRICT SUPERINTENDENT,

FLAGG'S COVE, GRAND MANAN, N.B., April 17, 1912.

D. H. KEELEY,
General Superintendent Government Telegraph Service.
Ottawa, Ont.

DEAR SIR,—In accordance with your letter of recent date I beg to submit the following report on the Government telegraph lines under my charge for the year ending March 31, 1912.

Since my last report, the first trouble to occur was in May, 1911, on the White Head line, which showed signs of playing out; after numerous attempts to repair it which were attended with more or less success, it finally gave out entirely on June 7, 1911; and although it was repaired temporarily by the Grand Manan Telephone Company, incident to their connection with it, per instructions from the Department, it did not work well; and I waited for such time as the *Tyrian* should be sent to repair it; which was not until October 3, at which time she also mended the Gannet Rock cable which had been parted by the ss. *Stanley* fouling her anchor in it while delivering stores in the month of August.

Repairs were completed on the Gannet Rock and White Head lines October 19, 1911.

Between the time of the *Tyrian's* arrival and departure, Mr. McDonald installed telephones at Ross Island Lighthouse on the White Head line, and at Mr. Ingalls residence on the Southern Head line. Both of these lines were subsequently connected to the Grand Manan Telephone Company's exchange at Castalia, per authority received by them from the Department, incident to the proposed change from telegraph to telephone, in our Flagg's Cove-Eastport line. The White Head line is in first-class order now.

The only trouble on the Gannet Rock-Southern Head line, lies in the fact that the generators in the instruments used have not sufficient strength to operate the drop at the Castalia exchange they being of the three-bar type, and considering the fact that the line is crowded it is impossible to get perfect satisfaction; but they manage to meet requirements, and when it is desired to signal Castalia exchange, they relay the call to Southern Head, that being the only office where the instrument has a five-bar generator thus enabling him to ring through. The people seem satisfied with these lines, and I am pleased to report them in fair working order at the present time.

The telegraph line from Flagg's cove to Seal cove has been working well; a cross or two during high winds has been the only trouble experienced. I can report this line in good working order at the present time, the several offices are all in good order and well kept.

Since last reporting the line from Flagg's cove to Eastport worked good up to June, 1911, considerable lightening about this time caused trouble on the line, fusing the arresters, and in one instance burning the relay in Mr. Cushing's office in Eastport; these interruptions were attended to without delay, but the line from Flagg's cove office to Long's Eddy cable hut needed to be thoroughly overhauled, as the wire was in very poor condition; this hindered the satisfactory working of the line, so during the latter part of July, we had work started on the new line which work was finished August 15, 1911. The system was then in first-class order and continued so as a telegraph line up to October 14, when it was changed from telegraph to telephone. The Grand Manan Telephone Company received instructions at this time to connect their exchange with our line per negotiations with Department, they accordingly completed

their work of connecting between here and Eastport with connection through the New England Telegraph and Telephone Company there.

Telephones were installed at Flagg's cove, Welch pool, and Mr. Cushing's office at Eastport, doing away with the telegraph instruments in each case.

The Grand Manan Telephone Company's exchange is bridged on to our line about a mile from Flagg's cove office.

For social purposes, this system works all right, but for business messages, especially code messages, it is almost impossible to transmit them without error, and considerable feeling was caused by the loss of our telegraph.

By the arrangement existing, two-thirds of all tolls over the cable, through the Grand Manan Telephone Company's exchange, is due the Government in addition to its own messages originating at the government offices. In this connection I beg to advise you of the lack of any check on the gross receipts. The Grand Manan Telephone Company receive returns from the New England exchange at Eastport before these returns are submitted to this office. You will, therefore, see that there is no way to verify their accounts, and our revenue is based on figures furnished by the telephone companies.

At the present time we are entirely cut off from electrical communication with the mainland, the cable being broken mid-way in the Grand Manan channel, between Long's Eddy and Herring cove.

Mr. Macdonald of the ss. *Tyrian* called here on the 13th inst., reporting the cable broken, as before mentioned; and as the repair ship *Tyrian* is undergoing repairs at Halifax, she cannot attend to the trouble.

Enclosed herewith is a tabulated statement of offices revised and amended to date.*

$100 is allowed for rent for the Flagg's cove office; fuel and light for the year amounts to $40.36; there is no allowance for living expenses, horse keep, &c., when it is necessary to hire a horse, the bill goes in the general expenditures. At Welch Pool we furnish the fuel for the office and $60 for rent.

Yours faithfully,

J. R. PARKER,

Operator.

* Included with the other Tabular Statements in Appendix.

REPORT No. 3.—MAGDALEN ISLANDS.

GRINDSTONE, M.I., April 1, 1912.

D. H. KEELEY, Esq.,
General Superintendent Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—I herewith beg to submit my annual report on the telegraph lines, cables and telephone cable.

On May 6, the Brion Island cable was reported working very weak; Mr. Binet, the general repairer, was sent to investigate the matter and found the cable was stranded and worn off close to the shore, the trouble being occasioned by the ice; he mended it and got it to work fairly well on May 30.

On May 8, the Meat Cove cable was interrupted, and the S.S. *Tyrian* came along and got it to work June 5.

On May 12, the Entry Island cable stopped working, but was put in order on the 23rd, there being something wrong with the inside connection of the telephone box.

On June 8, the Brion Island cable was again interrupted and remained so until the middle of June, when the ss. *Tyrian* came along and Mr. McDonald reported it greatly damaged in different places, although he soon got it to work, and communication was established on June 26; at that time Mr. McDonald landed a new telephone instrument at Entry Island, thereby replacing one placed there a year before; the last instrument gives better satisfaction.

On July 11, Mr. A. B. McDonald, general circuit manager and inspector for the Maritime Provinces, made a general visit with a view of inspecting our lines and found everything pretty well kept and in good order. I suggested that some of our offices might easily be changed from a telegraph instrument to a telephone box, and he recommended my plan, for instance: At Etang du Nord lighthouse (kept by N. Arseneau), this branch line, which is connected to the main line by a double line, could be converted into a telephone system by simply using the spare line that runs from that place to Etang du Nord Village (at Mr. Binet's); no further expense would be incurred to run a similar system to Cape Vert to my office; the South Beach and Pointe Basse might as well be connected to the House Harbour office, for very little traffic is done in any of these offices, which are more for conveniences than anything else, and I firmly believe that some other offices such as the Brion Island cable to Grosse Isle and the loop line from Grosse Isle to Grand Entry would give good satisfaction if converted into a telephone system, and this method would save a great deal of expense and would require but a few alterations to begin. However, I am under the impression the rest of the system should remain as it is.

On September 30, the Meat Cove cable was again interrupted, but repaired November 3 by the ss. *Tyrian*.

On November 15, the Brion Island cable was again interrupted. The ss. *Tyrian* came along November 22, attempted to hook it, but did not succeed. The people of that island were left completely isolated.

Lastly and lately, the Meat cove cable gave away another time; having been broken three times during the year, it is now interrupted since March 21.

Resuming my report, must say the heavy ice and strong tide has considerably injured our communication facilities this year, and as I above explained, the Meat cove cable was interrupted three times. The Brion Island cable has also been cut off, and this for a great part of the year; this cable when repaired last summer was found in bad order, but every trouble seemed then to have been remedied.

Poles have, as in the past, moved on account of heavy frost; some are canted in different places where the soil is bad, but everything will be attended to by our repairers as soon as the chance is given to go to work.

In concluding, may I solicit the department to see that a telephone connection joins my office to the Marconi station about ¾ to a mile distant? Since we are cut off by the interrupted Meat Cove cable, we are daily in touch with each other by transfer of business.

I have been entreated by a good many of our leading citizens to improve outside communication. The present Meat Cove cable being so frequently cut off from our islands, I would suggest that a new cable be laid to the mainland across to Prince Edward Island, which would be a great advantage for commercial purposes and for keeping in constant touch with our mail steamers and the rest of our ships.

If a cable should be laid from here to Prince Edward Island, it would rest on sandy bottom with less tide against it, while on the other hand the Cape Breton bottom is very rocky with a very strong tide.

Hoping, therefore, you will have a good idea of all the telegraph system, all its operation performed and to be performed, by this brief report.

I have the honour to be, sir,
Your obedient servant,
A. LE BOURDAIS,
Dist. Supt.

REPORT No. 6—ANTICOSTI ISLAND.

OFFICE OF THE DISTRICT SUPERINTENDENT,
WEST POINT, ANTICOSTI ISLAND, QUE., April 10, 1912.

D. H. KEELEY, Esq.,
General Superintendent Government Telegraph Service,
Ottawa.

DEAR SIR,—I beg leave to submit my annual report on Government Telegraph Service under my charge for the year ending March 31, 1912.

We have 230 miles of line in operation, and again I can only repeat myself in regard to the hard and dangerous travelling on the whole length of our line. Our repairers having to carry on their backs ten or twelve days' provisions besides repairing implements, and during fall and spring seasons rivers are very dangerous. Last summer, two of our repairers narrowly escaped with their lives and lost boat, clothes and all their provisions and had to walk back 23 miles before they could get anything to eat. In this case, I have applied to your Department to allow these repairers an indemnity for loss sustained. I strongly recommend it as we have to treat our repairers fairly or we shall get no one to go on the repairs. It is by no means a pleasure trip and I always find great difficulty in getting men to go on repairs.

Last year the North Shore cable gave away and it was repaired by the staff on ss. *Turian* and since works O.K. to this date.

We had a bad break-down on our line, specially so from North Shore cable right down to S.W. Point, this last January. The wind blew for nine days consecutively at the rate of 50 to 70 miles an hour. We have had an extraordinary rough winter. The line was blown from the poles nearly the whole way from West Point to S.W. Point, but I am happy to say that the interruption was short. Line was dug from under the ice and snow and put up on the poles with wire cramps and old rubber to insulate the wire as there was no means of getting insulators and side-blocks on such long distance.

There will be a great deal to do on the line this summer and if men can be had I shall put four men on the general repairs so the work can be done quicker. The repairers will also want a boat, but of special model to answer the purpose, and if your Department thinks proper I would beg leave to choose it myself as I know exactly what kind of boat is required.

I am pleased to say that our line has been in good working order the whole year round with the exception of few slight interruptions.

Fox Bay office is still closed and in communication by phone with Heath Point station. Business is telephoned to Heath Point and from thence by telegraph.

We have nine telegraph stations on the island. The following are the names of these stations with their respective agents and salaries, viz.:—

	Operators.	Salary Per Annum.
		$ cts.
English Bay	F. Cabot	360 00
West Point	Alf. Malouin	100 00
Ellis Bay	Jos. Dugay	25% commission.
S. W. Point	A. Lemieux	480 00
S. W. Point	L. Lemieux, Assistant	180 00
Salt Lake	E. Bourget	100 00
Shallop Creek	B. Bradley	360 00
South Point	E. Laprise	100 00
Heath Point	C. Hubert	200 00
Fox Bay	(Closed)	
West Point	Lrz. Malouin (Substitute Operator)	180 00
	General Repairers.	
English Bay	Horatio Malouin	420 00
Salt Lake	Jos. Bourget	420 00
	District Superintendent.	
West Point	Alf. Malouin	404 00

Last summer, I had to send Lorenzo Malouin to Heath Point to repair the Inker instrument in that office which was out of working order. This instrument was repaired O.K. and has been working well ever since. Luckily also there was no expense incurred for hire of boat, Malouin taking advantatge of the ss. *Princess* which was going that way, to make the trip.

Maintenance of the line during the past twelve months, viz.: from April 1, 1911, up to March 31, 1912, amounts to $6,489.39. This comprises all amounts paid here apart from salaries.

The traffic revenues of our line not including the month of March as I have yet no returns from the offices for that month, are $3,499.58 Ellis Bay alone comes in for $2,965.14 in that amount.

I anticipate good business at that last named office during the coming season as the pulp plant will be in full operation.

I beg leave to call your attention to the very small salaries paid our agents. I know no member of our staff who does not deserve an increase and I sincerely hope your Department will take the matter into consideration and act fairly and justly towards them all. Living is getting dearer and dearer every year and how can you expect a man and family to live on $30 and $25 a month. I pray the Government to please mend the situation.

The whole humbly submitted.

I have the honour to be, sir,

Your obedient servant,

ALF. MALOUIN.

SESSIONAL PAPER No. 19

REPORT No. 5.—NORTH SHORE ST. LAWRENCE AND CHICOUTIMI DISTRICTS.

QUEBEC, April 1, 1912.

D. H. KEELEY, Esq.;
General Superintendent Government Telegraph Service,
Department of Public Works,
Ottawa.

SIR,—I beg to submit my report for the past year.

The accounts for the whole North Shore system, including the Chicoutimi district, for the year ending December 31, 1911, show a satisfactory increase in the number of messages handled. The gross receipts amounted to $11,017.26, being an increase of ten per cent on the receipts of the year 1910.

CHICOUTIMI AND NORTH SHORE—WEST OF BERSIMIS.

Since I resumed the charge of the operation of the lines in this district on January 1, there has been no extra work, or expenditure, in connection with the maintenance of the lines, and no changes in the offices, or staff. to report. The lines are in good condition, and the wire interruptions during the winter have been few, and of short duration.

LAVAL TELEPHONE LINE.

This line is operated from the Bell Telephone Co.'s central office at Quebec. In addition to the three stations at Laval, an office was opened in January at St. Therese, Beauport, in charge of Mr. N. Bedard.

ESCUMINAC, N.B., LINE.

The line between Chatham, N.B., and Escuminac, was overhauled in August last, and the working condition greatly improved, preparatory to its equipment with telephones, and it is now operated as a joint telegraph and telephone circuit. I remain,

Your obedient servant,

E. POPE,

Superintendent.

REPORT No. 5 A.—NORTH SHORE ST. LAWRENCE EAST OF BERSIMIS.

OFFICE OF THE DISTRICT SUPERINTENDENT,
LONG POINT OF MINGAN, QUE., QUEBEC, June 13, 1912.

D. H. KELLEY, Esq.,
General Superintendent, Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—I hereby beg to submit to you the following report of the Government North Shore Telegraph line from Bersimis eastward to Chateau Bay, for the year ending March 31, 1912. The whole distance (1,075 miles) has been put in satisfactory condition. Four line inspectors (divisions of about 200 miles each) with their

gangs, made as usual the yearly overhauling and clearance of the line from Pointe des Monts to Chateau Bay, also renewal or repairing, from one end to the other, of bridges, camps, shelter huts, barges, canoes, poles, braces, &c. Besides, the other regularly appointed linemen also maintained their sections in working condition, from Rivière Colombier (16 miles west of Bersimis) to Pointe des Monts, and from Betchouan (20 miles east of Esquimaux Point) to Red Bay.

Apart from work above mentioned, four gangs of repairers nearly completed the wide clearing of line between Bersimis and Godbout. The remainder of that job (about $13\frac{3}{4}$ miles) will be done this next summer.

A corrected list of offices, &c., with my memorandum of omissions, additions and other information, was also presented to you for the fiscal year ended March, 1912.

Moreover, in this memo.'s column for 1911-12 will be noted corrections of whatever fixed allowances there are for rent, fuel, &c.

Number of agents, operators and assistant operators... ...	95
Division inspectors...	4
Section repairers...	28
Total...	127

NEW OFFICES, OFFICE CHANGES, &C.

May 18, 1911.—Reopening of May Island's office.

May 26, 1911.—Operator, Miss Helen Vigneault, replacing her brother Dérillas, with a commission of 50 instead of 25 per 100.

June 6, 1911.—Mrs. Alf. Landry taking charge of Mutton Bay office.

June 8, 1911.—Reopening of Blanc Sablon office.

June 8, 1911.—Mrs. P. Molloy replacing her husband at Pentecost Telegraph office.

June 9, 1911.—Alfred Cormier taking charge of line from St. Augustin to Chateau Bay, as division inspector.

June 23, 1911.—Mrs. Elzéar Chouinard resigning as agent operator at Caribou Island and taking charge of Egg Island telephone.

June 23, 1911.—Joseph Chouinard taking charge of Caribou Island office, replacing Mrs. E. Chouinard.

July 15, 1911.—Reopening of Rocky Bay office. Operator and repairer, James Kennedy. Same conditions as before.

July 20, 1911.—Interruption of Long Point-Anticosti cable.

August 12, 1911.—Closing of Betchouan office.

August 14, 1911.—Resignation of Mrs. P. Molloy and Joseph Picard taking charge of Pentecost office.

August 30, 1911.—Opening Long Point of Blanc Sablon office. Operators, Mr. and Mrs. Alf. Cormier. Commission 25 per 100 on Government messages.

September 29, 1911.—F. W. Osborne, resignation as division inspector from Kegaska to St. Augustin and reinstallation of J. L. Osborne.

October 7, 1911.—St. John's River office. Salary increased from $50 to $100 per annum.

October 11, 1911.—Closing of Blanc Sablon office for winter.

October 20, 1911.—Closing of May Island's office.

November 22, 1911.—Long Point-Anticosti cable becoming O.K.

January 14, 1912.—F. Gallienne's reinstallation as division inspector, from Pointe des Monts to Thunder River.

Hoping that you will find in this report the needed information,

I have the honour to be, sir,

Your obedient servant,

E. H. TETU,

District Superintendent.

REPORT No. 6—QUARANTINE LINE.

St. Jean, Island of Orleans, March 31, 1912.

D. H. Keeley, Esq.,
General Superintendent, Government Telegraph Service,
Ottawa.

Dear Sir,—I have the honour to submit herewith my annual report for the year ending March 31, 1912, on the operation of the telegraph and telephone lines of the Quarantine System, including cables from Quebec to Ile aux Coudres.

During the year 1911-12, three cables, two telephone and one telegraph were damaged. The cable between Crane Island and Montmagny was broken by ice on December 12, 1910, and repaired by the cableship *Tyrian* in June, 1911. This cable was again broken on January 2, 1912. To insure the safety of this cable it should be laid in the channel leading to Montmagny wharf.

The Ile aux Coudres telephone cable was broken by a departmental dredge while engaged in deepening the approach to the wharf at Les Eboulements in June, 1911, and I found it difficult to locate the broken end of this cable, as the dredged material had been dumped on it. It was impossible to raise a part of this cable owing to the current and the great depth of water. A new cable will have to be laid here.

The telegraph cable between St. François, I.O., and Ile aux Reaux was broken on January 2 last. I connected with the other cable with no results. The cable on the south side of Reaux Island is also broken. The quarantine station being without connections on that side, business was done through the wireless stations there and at Quebec.

In April, 1911, under special instructions, I changed the telegraph and telephone office, in charge of Miss J. Legace, at Grosse Isle, to the old office, where it was at first located.

In the same month, the lines on Orleans Island and Ile aux Reaux being in bad condition owing to fallen trees, &c., I made a general inspection and repair trip, after which the service was satisfactory.

In July last, a thunder storm of extraordinary violence swept over these lines, causing considerable damage, necessitating the employment of four men to repair the damage.

Under instructions on July 6, I transferred the office in charge of Mr. Valère Pauliot to Mr. Alfred Turgeon at St. Laurent.

On August 10, the telephone instrument in charge of the above named Alfred Turgeon having become defective, I replaced it with a new one.

Under special instructions on June 8, I placed a sounder in a building next to the telegraph office at. St. François, I.O.; agent, Mr. F. X. Lemelin.

On July 11, 1911, as per instructions, I opened a telegraph office at St. Pierre, I.O., in Mr. François Cote's house. Mr. Cote was appointed agent.

The Department having acquired the line, placed upon our poles by the Bell Telephone Co., from St. Laurent to Ste. Petronille, and having found this section in very bad shape, I repaired this line from St. Laurent to within two miles of Ste. Petronille. 130 poles 30 feet long were planted and 30 of 20 feet, which were on hand from the preceding year. This portion of the line is entirely rebuilt, some of the poles being planted 3½ feet in solid rock, making this line of exceptional solidity and has given perfect satisfaction.

On November 21, I proceeded to Grosse Ile and transferred the telegraph and telephone instruments from the old office to the new one built by the Department of Public Works. This new office was well suited for the end it was intended to serve, *i.e.*, public telephone and telegraph office, and is situated in the centre of the island, near the old office.

On February 1 last, I proceeded to Crane Island, where I transferred the three offices from Messrs. Narcisse Lachance (regular office), Charles Pinchard and Celestin Vezina (accommodation), to Messrs. Hector Lavoie (regular office), Fénélon Pinchaud and Olivier Gagné (accommodations). I then gave all necessary directions to Mr. Lavoie for the proper running of these offices.

I think it necessary to replace a great number of the poles on this line, to be 30 feet long, especially in the villages of St. Jean and St. Laurent, owing to the great difficulty we experience in giving good service.

Herewith attached are details covering lengths of line, cables, names of agents, salaries, &c., &c., of this division of the Quarantine System under my charge. I also enclose record of interruptions, with dates and causes; cost of repairs of these interruptions, &c.

Yours faithfully,

J. P. POULIOT,

District Superintendent.

REPORT No. 6a.—TIMISKAMING DISTRICT.

OTTAWA, November 15, 1911.

D. H. KEELEY, Esq.,
General Superintendent, Government Telegraph Service,
Ottawa.

KIPPEWA DAM-VILLE MARIE TELEPHONE LINE.

DEAR SIR,—On January 5, 1911, I received the following instructions:—

In order that there may be no misapprehension as to what is had in view in the matter upon which you are about to proceed to the Timiskaming district, you might please note that the intention of the Department is to construct a single wire telephone line to connect Kippewa dam with the terminal station of the Mines Power Company's house on the Montreal river, a distance of some 12 or 14 miles including a mile

stretch of cable across the river. This cable will be shipped on a reel in due course to whatever point on the railway you may find most convenient.

The first thing to be done is to ascertain whether a special route for the line is necessary to ensure its being accessible all the year round for maintenance in working order and what woods-cutting and right of way would in such case be called for, or if it would be practicable and advisable to run the wire along the trail or roadway that is at present time being used either with a view to its permanency or a possible required shifting to a more favourable position later on. When the route to be followed is determined upon arrangements might immediately be made for the supply and distribution of whatever poles may be required in addition to whatever suspension of the wire on standing trees may be advantageously effected. The mileage to be provided for having been ascertained, you might report with an advice as to where shipment of the requisite material might best be made. Ascertain if a working gang can be readily engaged or if a foreman with some assistants should be sent to do the needful. There is had in view in the Department the engagement of a foreman, if there is any occasion for his employment. At the same time send a requisition for any required tools if it is found the requirement cannot be met by local purchase.

The same procedure as above might very well be observed as regards the projected line to afford connection between Quinze dam and the nearest existing telephone station with which connection may be effected.

It is immaterial which of the two lines is taken in hand first.

Yours faithfully,

(Sgd.) D. H. KEELEY,

General Superintendent.

In accordance with the above, I left Ottawa on January 7, 1911, and proceeded to Kippewa:

Kippewa village is situated at the mouth of Gordon creek at the southeastern end of Lake Kippewa. It is reached by a spur from the main line of the Canadian Pacific railway from Mattawa, 42 miles away. From Kippewa village to Kippewa dam the distance is 30 miles.

On the afternoon of January 12, procuring a team, teamster and a guide, I left Kippewa village and proceeded up the lake passing the night at a lumber camp on McKenzie island and reached Kippewa dam on the afternoon of the 13th.

On the 14th, I left Kippewa dam with the guide and proceeded to make an examination of the ground over which the projected line was to be built. On my return to Kippewa village I reported to you as follows:—

As shown on the accompanying tracing you will see that the Dominion Government's winter road does not follow the Kippewa river, but diverges to the northwest to Ville Marie while the Kippewa river runs in a westerly direction as far as what is locally known as the Great Bend where it suddenly makes a sharp turn to the south emptying into Lake Timiskaming. The river trail shown in the blue print herewith returned to you existed some years ago but is now practically obliterated. A right of way will have to be cut from Kippewa dam to Martel's point on Lake Timiskaming. The heaviest cutting will be from Kippewa dam, to the Great Bend, the balance will be easier owing to the country having been cut over some time ago by the lumbermen owning same. From Kippewa dam to Lake Timiskaming the timber is owned by Mr. J. R. Booth of Ottawa, from whom permission will have to be obtained to run our right of way. The distance from Kippewa dam to Martel's point is 13½ miles. From the mouth of the Metabetchouan river to the Mines Power house, located on the same river, the distance is 2 miles. Permission will have to be obtained to cut right of way over these 2 miles from Messrs. Shepherd & Morse.'

(Sgd.) J. E. GOBEIL.

On January 18, 1911, I left Kippewa village with ten men and a cook and proceeded to Kippewa dam and began cutting the right of way for the dam towards Lake Timiskaming. Some difficulty was experienced in securing labourers, as nearly all the men were taken up by the lumbermen operating in the district. I had to secure most of mine from Mattawa. On January 23, when camp was fully established, said camp being composed of sleeping quarters for men, cook-house and stable, and the men fairly at work on the right of way, I received a telegram from you worded as follows:

Let work be stopped. Discharge workmen and telegraph amount of paylist due. Further action postponed pending instructions from Department. Please acknowledge receipt.

(Sgd.) D. H. KEELEY.

The above telegram reached me at 3 p.m on the 25th, when I was nine miles away from the dam. The delay in delivery of your wire was due to the severity of the weather which was so bad that no one in Kippewa would attempt the 30-mile crossing of Kippewa lake from Kippewa village to the dam. However, on receipt of your telegram work was stopped at once. Camp was broken up, provisions not of a perishable nature, as well as stores, tools, material, &c., were left in a shanty located on the dam site, in charge of Mr. R. F. Davey, the resident engineer of the Public Works Department in that district. On reaching Kippewa village the men were paid off and left for Mattawa. The work performed to date was as follows:—

A telephone had been installed in a shanty belonging to the dam, said shanty being on the west side of the Kippewa river, the right-of-way had been cleared to a point about one quarter of a mile down to the river where a crossing was to be thrown over. On the opposite side of the river, the right-of-way was cleared a distance of two and one half miles over the roughest and most heavily timbered country the line would have to traverse. A road was broken a distance of five miles to permit the freighting of line materials, camping outfit, &c.

You will understand that upon receipt of your telegram dated January 27, instructing me to resume operations, all the preliminary work of getting a gang of men together, getting them on the work, &c., had to be done over again. The right-of-way gang was at work on January 31, and we reached Martel's point on February 22. Owing to the distance to be travelled, before reaching the scene of operations and returning to Kippewa, only 18½ days of actual work on that stretch of line from Kippewa dam to Martel's point was put in by the men. The whole of this work was done on snowshoes even the men engaged as climbers having to put their snowshoes on and off going between poles as there was from 8 to 10 feet of snow all through the bush.

The weather was inclement, heavy snow and wind-storms succeeding one another making the forwarding of materials and provisions almost impossible, all traffic on Lake Kippewa being suspended for days, the snowfall on February 5, 6 and 7, having been the heaviest known in the district in years. On February 4, the whole gang was under canvas at the Great Bend. For the first 7½ miles the timber was extremely dense necessitating a large amount of cutting and clearing. The country also is very rough, hills and deep gullies succeeding each other with great regularity. For the first three months it was almost impossible to keep the men on the work, they were 'jumping' the job almost as soon as they came on to it owing to the hardships they had to undergo. One can easily imagine that being under tents from January until March was not at all attractive to these men. On February 23, the right-of-way was cut to Martel's point 13½ miles and 7½ miles of wire stretched. On the last 5½ miles of the right-of-way which was through a thick 'second growth' there were no trees suitable for poles so I set the gang cutting and piling poles on

the 23rd and 24th, 175 poles being thus got ready for planting. On February 28, I was in receipt of the following message dated Ottawa, February 24:—

> Department directs work stopped mailing further directions to Kippewa. Please acknowledge receipt.
>
> (Signed) D. H. KEELEY.

The above being complied with I received the following dated Ottawa, February 28:—

> Directions just received to build the line by roadway, Kippewa dam to Ville Marie. Please start gang collecting again the wire and insulators for use on new route; yourself proceed to arrange for poles. Consult Mr. Valiquet at Fabre, and Mr. A. E. Guay, Ville Marie. Acknowledge receipt.
>
> (Signed) D. H. KEELEY.

On receipt of the above I reported to you on work done as follows:—

> Line is completed to a point eight miles from Kippewa dam. Right-of-way cut and cleared to Martel's point five miles further. Wire, sideblocks and insulators are distributed at the most advantageous points along these five miles. From Martel's point to a small island near the mouth of the Metabetchouan river across Lake Timiskaming, the distance from shore to shore is 6,400 feet. From the mouth of the Metabetchouan river to the Mines Power House the distance is two miles.
>
> From a point seven and three-quarters miles from Kippewa dam, the timber suitable for telegraph poles absolutely disappears, making way for a tangle of underbrush composed of birch, balsam and poplars varying in size from four inches at the butt to one inch, but of such density as to make the cutting and clearing of the right-of-way through same more difficult and slow than when cutting through larger timber. When the right-of-way was cut and cleared to Martel's point in Lake Timiskaming, the construction party retraced their steps to the nearest available timber, where 175 poles were cut.
>
> (Signed) J. E. GOBEIL.

In accordance with the telegram quoted above, the construction party was placed at work gathering up the materials which had been distributed along the right-of-way, which was now to be abandoned. We then began cutting and clearing a new right-of-way from a point 8 miles from the dam towards Denis, 5½ miles away. This last named place is on the government road to Ville Marie, and marked the end of our right-of-way cutting making the distance from Kippewa dam to Denis, under our wire, 14½ miles. The construction party was still handicapped by the depth of snow which made it almost impossible to locate favourably the places to dig post-holes, there being from six to eight feet of snow on the level.

From the 10th of April to about the 10th of May the thawing of the snow retarded the work as the post-holes filled with water almost as quickly as they were dug; along stretches there were from one to two feet of water under the snow all tending towards making progress slower. However, work was pushed as fast as possible under the conditions existing. As soon as the snow disappeared the work became easy, hardly any difficulties being encountered. The 175 poles which were cut by the construction party were all used up between the point where the line diverges from the abandoned right-of-way and Denis. Poles used along the roadway were of cedar and cost the department $1.25 per pole distributed along the road. These poles were 26 feet long, 5 inches at small end, straight, sound and free from serious knots and cracks. Where the line traversed villages or settlements the poles were peeled their whole length.

As a résumé I may say that bginning at Kippewa dam the line for a distance of some eight miles traverses a heavily timbered country rather rough in formation and very rocky, then the timber became lighter, finally transforming itself into a 'brulé' composed of a thick second growth of poplar, balsam, &c.; the line emerges from this brulé about ⅛ of a mile from Denis when it strikes the government road referred to in the beginning of this report, which it follows to Fabre, through Fabre and on to Ville Marie. Along this roadway some right-of-way clearing had been done. A telephone was installed in the Fabre post office in charge of Mr. Valiquette, postmaster at that place.

Distances are as follows:—

	Miles.
Kippewa dam to Denis (through bush)	14½
Denis to Fabre	6
Fabre to Ville Marie	13
Total	33½

On May 17, I wired you as follows:—

KIPPEWA DAM, VILLE MARIE.

Telephone line connected local switchboard to-day, ten a.m.

(Signed) J. E. GOBEIL.

Men were paid off, materials, tools, &c., were stored, and after making the necessary arrangements for the care of the line I returned to Ottawa.

Attached sketch shows location of above described line as well as the abandoned portion of right-of-way.

North Timiskaming-Quinze Dam Telephone Line.

On June 21, I received the following from you:—

Having reference to my letter of the 5th January last, the projected telephone line for connection with the Kippewa dam having in the interval been completed and put in operation via Denis and Fabre to Ville Marie.

I have now an authorization to request that you might return forthwith to the locality in question and proceed as promptly as you can with the construction of the projected line from North Timiskaming along the recently opened roadway that is being used by the departmental engineers to the Quinze dam, a distance of 17 miles or so. It will answer all purposes to proceed with this work in the same way as in that you have just completed, being governed by the same considerations as were before observed in the matter of purchases of poles, engagement of workmen, &c.

Please send an advice of your arrrival and commencement of work and make occasional reports of progress for the information of the Department in due course.'

(Signed) D. H. KEELEY.

On receipt of the above, I left Ottawa on Friday, June 23, and proceeded to Ville Marie where I gathered up all tools and materials which had been stored there on the completion of the Kippewa dam-Ville Marie line. The men were hired in Ville Marie on the advice of Rev. Father Desjardins, of North Timiskaming, who notified me that there was a scarcity of men owing to Federal and Provincial works being carried on simultaneously on the government roads, Quinze dam and the colonization roads.

On June 27, I shipped outfit and men to North Timiskaming; dug first post-hole at 1.00 p.m. on Thursday, June 29.

I purchased through Mr. Ranger, Mayor of North Timiskaming, and Rev. Father Desjardins of the same place, 264 cedar poles, at $1.25 each, and 271 tamarack poles at 85c. In the village of North Timiskaming the municipality furnished, at no increase in price, the following number of peeled cedar poles: 1 41-foot pole, 12 35-foot poles, and 14 26-foot poles; which are all included in the number of poles turned in for payment and used in the construction of that line. Poles asked for and furnished were to be 26 feet long, 5 inches at small end, straight, sound and free from serious knots and cracks.

On August 1, I wired you as follows:—

> Telephone connection established between North Timiskaming and Quinze Dam, August 1, 4 p.m. Line finally completed, August 4.'
>
> (Signed) J. E. GOBEIL.

Distance as follows:—

	Miles.
North Timiskaming to government road (through bush).. ..	13½
Government road to Quinze dam (1 mile through bush)... ..	5
Total....	18½

From North Timiskaming to a point about three miles away, the summer road is in first class condition, but it then becomes an old corduroy road for a distance of some nine miles, running through a series of swamps and bogs alternating with rocky stretches which made the erection of a pole line difficult and necessitating a great deal of bracing, also the cutting and clearing of practically nine miles of right-of-way, as the bush was close to the road for the greater part of the distance and through this bush, only an odd tree could be used as a tree pole. Thirteen and a half miles away from North Timiskaming, the government winter road branches off towards Quinze dam, a distance of five miles. This stretch is very rough and swampy, with a great deal of rocky outcrop. Three telephones are installed on this stretch of line, one at North Timiskaming, one at Camp 'C' and one at Quinze dam.

On completion of this line, materials left over, tools, &c., were stored at North Timiskaming, men paid off and I returned to Ville Marie to complete some other work in hand.

Ville Marie-Quinze Dam Line.

On August 5, I received the following instructions, dated Ottawa, August 3:—

> I have now from the department an authorization for the construction of a line to fill the gap between Ville Marie and the Quinze dam, in pursuance of the memorandum dated 24th July, a copy of which is herewith enclosed for your information and guidance.
>
> You might please arrange for the requisite supply of poles forthwith and send to me an advice as to what point or points the material, wire, insulators, &c., might best be ordered to for shipment.
>
> (Signed) D. H. KEELEY.

In compliance with the above, I left Ville Marie for North Timiskaming on August 7, reaching North Timiskaming at 6 p.m. of the same day. On the 8th of the same month, I gathered up all the tools and materials which had been stored at this place on the completion of the North Timiskaming-Quinze dam line and left for Quinze Dam which we reached at 7.30 p.m. On the 9th we set up tents and prepared to begin construction the next day. On the 10th, 11th and 12th, cleared right-of-way from the dam office to crossing at the site of the dam and half a mile on the other side

of Maple rapids. On the 13th, threw a 1,200 foot span across the above mentioned rapids and a telephone was installed at Camp 'B,' one-quarter of a mile from the crossing over Maple rapids (site of Quinze dam). On 14th crossed all camping outfits and materials and set up our camp one mile beyond Maple rapids. We then set to work cutting right-of-way through to the Lorrainville road, 7½ miles away; we reached Guilbault's Mill on the Lorrainville road on September 7. The country that the line traverses from Quinze dam to Guilbault's mill on the Lorrainville road, is very rocky, swampy and heavily timbered. A telephone was installed in the St. Eugene post office, 8½ miles from Quinze dam. From Guilbault's mill to Ville Marie the line follows the highway via Lorrainville. This road and surrounding country does not require much description as it is a first class highway of long standing. The country is fully settled on both sides of the road. There are three parishes on the road, St. Eugene, St. Isidore, and Lorrainville. Construction was easy, as supplies, materials, &c., could be readily freighted when required. This line gives service to many people who had no means of communication, besides giving a through service over our own line from Kippewa dam to North Timiskaming. The Ville Marie-Quinze dam line was the connecting link between Kippewa dam-Ville Marie line and the North Timiskaming-Quinze dam line. Direct communication is had at North Timiskaming with the Timiskaming Telephone Company, having its headquarters at Haileybury. On this stretch of line, 314 tamarack poles at 75c. per pole, and 248 cedar poles at $1.25 per pole were respectively purchased from Mr. Thos. Piché and Mr. Tancréde Tremblay; balance were tree poles. A telephone was also installed in the Lorrainville post office and our wire connected with the Timiskaming Telephone Company's exchange in Ville Marie. On October 11, I wired you as follows:—

> Ville Marie-Quinze dam line completed to-day.—Kippewa dam-North Timiskaming via Ville Marie-Quinze dam in first-class shape.
>
> (Signed) J. E. GOBEIL.

Distance as follows:—

	Miles.
Quinze dam	0
Camp 'B' (through bush)	½
St. Eugene (through bush)	7½
Lorrainville	13½
Ville Marie	5
Total	26½

Attached is a statement showing the completed Timiskaming district telephone lines constructed by me under your instructions, said statement containing list of offices, intermediate distances, names of agents, salaries per annum, date of appointment and necessary explanatory notes.

The following is the Tariff in force.

The tariff on the Dominion Government's telephone line from and to all points between Kippewa dam and North Timiskaming via Ville Marie and Quinze dam:—

Three minutes	25 cts.
Every additional minute	5 "
Minimum charge for using telephones	25 "

When connection is made between the government telephone line and the Timiskaming Company's lines the tariff shown in the following table is to be collected in addition to the above:—

Bertha	35 cts.
Charlton	35 "
Cobalt or Haileybury	35 "
Earlton	35 "
Englehart	35 "
Gillies' Depot	35 "
Giroux Lake	35 "
Guiges, Que	25 "
Hanbury	25 "
Heaslip	35 "
Hillview	35 "
Latchford	35 "
Milberta	35 "
New Liskeard	25 "
North Cobalt	35 "
Pearson's Landing	25 "
South Lorrain	45 "
Thorneloe	35 "
Tomstown	35 "
Uno Park	35 "

These rates are for three (3) minute conversations. For each additional minute the charge is 5 cents.

Attached also is a sketch showing the location of line reported upon and the territory traversed by same.

I have the honour to be, sir,

Your obedient servant,

J. E. GOBEIL,

Technical Assistant to Superintendent.

NOTE.—List of officers, staff, &c., will be found in the Tabular Statements appended to the general report.

REPORT No. 7—PELEE ISLAND.

LEAMINGTON, ONT., April 12, 1912.

D. H. KEELEY, ESQ.,
General Superintendent Government Telegraph Service,
Ottawa, Canada.

DEAR SIR,—In the matter of the Pelee Island telephone system, from March 31, 1911 to March 31, 1912, I beg to report as follows:

1. The line on the island is in good repair and working order, except near the North Point lighthouse, where about twenty poles will require to be moved east a few rods over the marsh to the new dyke to avoid trouble from washouts, also a few fence posts will be necessary for braces to some of the poles on the rocky portions of the line where the earth is shallow.

2. The line on the mainland from Leamington office to the cable landing and thence to Point Pelee is in good working order but will require a few new poles erected

at different places the old ones being rather badly decayed. I have sufficient good poles on hand for that purpose.

3. The cable is at present working very nicely but it takes occasional spells when it does not work very clear. I think the heavy ice-jams of December 1910 must have strained or damaged it, as ever since then it has occasionally acted as if there were leaks in it. I think it would certainly do it no harm and might improve it considerably if it were under-run, examined and repaired where damaged, when the weather is settled this spring or summer.

4. The service on the whole could be much improved by making the line on the island metallic and putting a number of the instruments there on a separate wire; the poles in present use could be utilized for that purpose with the addition of cross-arms, braces, &c., and a small switch placed at the north dock for mainland connection when necessary for the instruments not on the main line.

5. I herewith submit a list* of the offices, operators or agents with summary of messages from March 31, 1911 to March 31, 1912.

Yours most respectfully,

JOHN McR. SELKIRK,

District Superintendent.

* Included with other tabular statements in appendix.

REPORT No. 8—NORTHWEST LINES.

GOVERNMENT TELEGRAPH SERVICE.

EDMONTON, ALBERTA, April 15, 1912.

D. H. KEELEY, ESQ.,
General Superintendent Government Telegraph Service,
Ottawa, Canada.

DEAR SIR,—I beg herewith to submit my annual report of the Northwest lines, covering conditions, repairs, construction and changes in staff up to March 31, 1912.

CONDITIONS GENERALLY.

The lines have been kept in good working order throughout the year, except in one instance where the Moosejaw-Wood Mountain line was open for about ten days. This was caused by a bad storm during which several breaks occurred, on account of the severe weather, bad roads and the long distance to be covered. Lineman Brown's horses played out, and caused considerable delay in making the necessary repairs. The distance was found too great for one repairer to cover satisfactorily, and a second repairer was engaged, with the consent of the Department, to look after the northern portion of the line. An appropriation was made by Parliament to re-pole the Moosejaw-Wood Mountain line throhghout, except the Gravelburg loop. Much of this work was done during the year and with its completion, delays should be infrequent. Some little re-poling and changing of line was done on the Qu'Appelle-Edmonton section. There is a large amount of this work to be done in order to have the line removed to the highway from the fields, and have the decayed and weather-worn poles replaced by new ones. Owing to the small amount of money available for this work during the season in which the work could be done, only some of the more important places were attended to—22 miles in all. A number of poles and 20 miles of wire and material are now on hand to continue this work during the coming summer. Owing

to the amount of work in my office I was unable to make a trip of inspection during the year.

CONSTRUCTION—PEACE RIVER-GRAND PRAIRIE LINE.

During the year this line was completed from Peace River crossing to Dunvegan, a distance of 72 miles, and an office opened at Dunvegan February 13, 1912. Poles were delivered and material purchased, and forwarded to Dunvegan and Grand Prairie for the completion of the line to Saskatoon lake, in the Grand Prairie district, a further distance of 65 miles. A second wire was stretched on this pole line from Peace River crossing to Shaftbury settlement, a distance of 15 miles, for use as a telephone line. Four telephones were installed, one in our office at Peace River crossing, one at Collin's, 3 miles; one at R. C. Mission, 8 miles; and one at English Church Mission, 15 miles; the distances being computed from Peace River crossing. These telephones were installed at a rental basis to the parties named, at an annual charge of $15, conditionally that they are also intended for the use of the public when wishing to reach our Peace River crossing office, for which a charge of ten cents will be made. The total cost of this work to March 31, was $17,765.05.

ST. PAUL DE METIS-DURLINGVILLE LINE.

Distance 48 miles. Owing to the lateness of the season, before the full appropriation was available, construction was not begun. Poles were delivered and material purchased and forwarded to St. Paul de Metis at cost of $3,134.95.

BATTLEFORD-ISLE LA CROSSE LINE.

Construction work was begun in July, 1911. Holes were dug for a distance of 97 miles from North Battleford. Poles were erected for 31 miles from North Battleford to Meota, with sideblocks and insulators attached. The next 20 miles of poles are on the ground, but, owing to the lateness of delivery, are not in place. Next 46 miles poles are erected. Poles are delivered for the next 75 miles, making 172 miles of poles delivered, with 77 miles erected with sideblocks and insulators. Wire stringing was begun at a point 97 miles north of Battleford and continued towards Battleford for a distance of 46 miles, when, owing to weather conditions, the work had to be discontinued for the season. Including the work done, there are on hand sufficient poles to carry the line 172 miles. 250 miles of wire, 250 miles of sideblocks and 97 miles of insulators, (1,900 insulators which were ordered have not yet been received). The total expenditure on this line to date is $19,204.65.

SHIFTING LINE.

Qu'Appelle-Edmonton section. An appropriation was voted for the purpose of shifting the line from the fields to the highway. This entails a large amount of work, as practically the whole line is running through fields. Only a very small amount of this work was done during the year, 22 miles in all, covering some of the more important points at a cost of $2,651.19. We have on hand 16 miles of material and poles for continuing the work.

MOOSEJAW-WOOD MOUNTAIN LINE.

The work of re-poling and moving the major portion of the line from the fields to the highway was carried on during the year beginning at a point 13 miles south of Moosejaw. Forty-seven miles were completed and poles erected a further distance of

8 miles. We have on hand 20 miles of material and 200 poles for the continuance of this work, the total expenditure to date being $7,011.91.

BUILDINGS.

Peace River Crossing site purchased, and office dwelling erected at a cost of $3,000. This building was partitioned so that a room could be used for post office purposes if so required.

GROUARD.

A site was purchased for the erection of an office dwelling at a cost of $450.

SAWRIDGE.

Site for office dwelling arranged for and some material purchased, but owing to the scarcity of lumber, sufficient could not be secured to warrant the beginning of construction before the 31st of March.

ADDITIONS AND CHANGES IN STAFF.

Battleford.—H. C. Rogers, lineman, replacing J. T. Dewan (resigned).
Saskatoon.—C. Webster, agent, in place of Canadian Pacific railway.
Saskatoon.—Canadian Pacific Railway Messenger Service.
Andrew.—L. Carey, agent, replacing B. Carey (resigned).
Edmonton.—H. Hunt, clerk in district superintendent's office.
Edmonton.—J. H. Young, lineman, replacing H. Hunt, transferred to district superintendent's office.
Edmonton.—A. Duplessis, messenger, replacing L. Hooper (resigned).
Athabaska Landing.—A. Parry, lineman, replacing S. Ibbotson (resigned).
Mirror Landing.—J. A. Jacques, agent-operator, replacing R. White (resigned).
Grouard.—V. F. MacLeod, agent, replacing J. A. Hamelin, transferred to Gravelburg.
Peace River.—P. Gauvreau, agent, replacing G. E. MacLeod, transferred to construction foreman.
Peace River.—C. Banford, lineman, replacing F. Anderson (resigned).
Dunvegan.—N. Coleman, agent, new office, February 13, 1912.
Dunvegan.—R. Harvey, lineman, new office, February 13, 1912.
Moosejaw.—J. Lovelace, agent, replacing Canadian Pacific railway.
Moosejaw.—Canadian Pacific railway instead of H. Sikes, batteryman (resigned). Canadian Pacific railway now supplies current from dynamo.
Moosejaw.—Canadian Pacific Railway Messenger Service. New service.
Gravelburg.—J. A. Hamelin, agent, replacing J. L. Osborne (resigned).
Expanse.—A. S. Macdonald, agent, new office, February 26, 1912.
Expanse.— J. Gagnon, lineman, new office, February 26, 1912.

NEW OFFICES.

Expanse, Sask., Moosejaw-Wood Mountain section.
Dunvegan, Alta., Peace River-Grande Prairie section.

Collins, R. C. Mission, English Church Mission, Shaftesbury Settlement.—Telephone line installed for public use with an annual rental of $15 on each telephone for parties named, and a toll of 10c. per call to be charged the public.

The revenue for the fiscal year of 1911-12 has increased $8,800, or about 100 per cent over the previous fiscal year.

I have the honour to be, sir,

Your obedient servant,

ROBT. C. MACDONALD,

District Superintendent.

NOTE—A tariff sheet and a list of the lines showing year of construction, &c., is hereto appended. The tabular statements of staff, &c., are included with the others in the appendix to the general report.

GOVERNMENT TELEGRAPH SERVICE—*Continued.*

SASKATCHEWAN AND ALBERTA LINES.

Total Wire Mileage.	OFFICES. (1911-12.)	Intermediate Wire Distances.	Qu'Appelle.	Fort Qu'Appele.	Lipton.	Kutawa.	South Humboldt.	Saskatoon.	Henrietta.	Battleford.	Bresaylor.	Lloydminster.	Onion Lake.	Frog Lake.	Moose.	Elk Point.	St. Paul des Metis.	Saddle Lake.	Pakan.	Andrew.	Whitford.	Lamont.	Fort Saskatchewan.	Edmonton.	Halfway Lake.	Athabaska Landing.	Mirror Landing.	Sawridge.	Grouard.	Peace River Crossing.	Dunvegan.
0	Qu'Appelle	0																												
17	Fort Qu'Appelle	17	25																											
28	Lipton	11	25	25																										
74	Kutawa	46	25	25	25																									
152	South Humboldt	78	25	25	25	25																								
221	Saskatoon	69	25	25	25	25	25																							
273	Henrietta	52	35	35	35	25	25	25																						
320	Battleford	47	25	25	25	25	25	25	25																					
347	Bresaylor	27	35	35	35	35	35	35	25	25																				
439	Lloydminster	92	*25	35	*25	35	35	*25	35	25	25																			
481	Onion Lake	42	35	35	35	35	35	35	35	25	25	25																		
504	Frog Lake	23	35	35	35	35	35	35	35	35	25	25	25																	
516	Moose	12	35	35	35	35	35	35	35	35	35	25	25	25																
534	Elk Point	18	35	35	35	35	35	35	35	35	35	25	25	25	25															
551	St. Paul des Metis	17	35	35	35	35	35	35	35	35	35	25	25	25	25	25														
569	Saddle Lake	18	35	35	35	35	35	35	35	35	35	25	25	25	25	25	25													
606	Pakan	37	35	35	35	35	35	35	35	35	35	35	35	25	25	25	25	25												
616	Andrew	10	35	35	35	35	35	35	35	35	35	35	35	35	25	25	25	25	25											
623	Whitford	7	35	35	35	35	35	35	35	35	35	35	35	35	25	25	25	25	25	15										
648	Lamont	25	35	35	35	35	35	35	35	*25	35	*25	35	35	35	35	25	25	25	25	25									
675	Fort Saskatchewan	27	35	35	35	35	35	35	35	*25	35	*25	35	35	35	35	25	25	25	25	25	25								
693	Edmonton	18	35	35	35	35	35	35	35	*25	35	*25	35	35	35	35	35	35	25	25	25	25	25							
742	Halfway Lake	49	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	25	25						
791	Athabaska Landing	49	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	25	25	25					
861	Mirror Landing	70	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	25				
899	Sawridge	38	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	25	25			
977	Grouard	78	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	35	25	25		
1,060	Peace River Crossing	83	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	35	35	25	25	
1,128	Dunvegan	68	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	50	50	50	35	25	0

NOTES.

	Where the 10 word rate is:	The additional word rate is:
The rates on this sheet are for messages of 10 words or under, exclusive of address and signature.	15c. 25c. or 35c. 50c. 60c.	1c. 2c. 3c. 4c.

Offices marked thus * are at points reached by other lines, and the rates are made to correspond with those charged by them.

NORTHWEST LINES.

Location of Lines.	Points Connected.	Year.	Land Lines.	Total Mileage	Number of Offices.	Messages Sent.
North West.	Qu'Appelle—Edmonton	1883	584	584	16	
	Edmonton—Athabaska Landing	1904	98	98	2	
	Athabaska Landing—Mirror Landing	1909	70	70	1	
	Mirror Landing—Peace River Crossing	1910	199	199	3	
	Peace River—Dunvegan	1911	72	72	1	
	Peace River—Shaftesbury	1911	15	15	3	
	* Moosejaw—Wood Mountain	1885	94	94	4	
	Wood Mountain—Willow Bunch	1904	40	40	2	
	Gravelburg Loop—(near Limerick)	1910	42	42	1	
	Saskatoon Loop	1892	28	28	1	
	Edmonton—Indian Agency—Stony Plain	1904	32	32	5	
	Edmonton—St. Albert	1887	9	9	1	
	St. Albert—Qui Barre—Alexandre	1902	25	25	3	
	Duck Lake—Batoche	1902-10	9	9	2	
	Duck Lake—Indian Agency	1902	3½	3½	3	
	Lloydminster Loop (near Onion Lake)	1904-09	58	58	1	
	Andrew Loop (near Pakan)	1904	10	10	1	
	Andrew—Whitford	1905	7	7	1	
	Lamont Loop (near Star)	1910	7	7	1	
	Lipton Loop (near Fort Qu'Appelle)	1906	2	2	1	
	Fort Qu'Appelle—File Hills Agency	1907	28	28	4	
	Saddle Lake—Industrial School	1900	6½	6½	1	
	Kamsack—Indian Agency	1907	6½	6½	2	
	Kamsack--Indian Agency--Pelly--Keys Reserve	1910	17½	17½	4	
		.....	1,463	1,463	64	

*The distance on the Moosejaw—Wood Mountain line has been increased by four miles. This is owing to a change of a part of the line from fields to the highway.

REPORT No. 9.

OFFICE OF THE GENERAL INSPECTOR,
(SASKATCHEWAN, ALBERTA AND BRITISH COLUMBIA)
EDMONTON, ALTA., April 17, 1912.

D. H. KEELEY, ESQ.,
General Superintendent Government Telegraph Service,
Ottawa, Canada.

DEAR SIR,—I beg to submit herewith a report covering the lines in my inspectorate for the fiscal year ending March 31, 1912.

NORTHWEST LINES.

QU'APPELLE-EDMONTON SECTION.

During the past season few interruptions have occurred on this section. The winter just past has been exceptionally free from storms, thus rendering easier the upkeep of the wires. Settlement continues to increase wherever homesteads are available thus enhancing the usefulness of the line. At points where the needs were

greatest, the line has been removed from the fields to the roadways, but a large amount of this work is yet to be done, and will be necessary each year until the whole of the original line has been located along the highways. Where surveys have been made all new lines are built along the road allowance.

BUILDINGS AND REPAIRS.

No buildings were erected or repairs made on this section during the year. An appropriation of $1,300 for heating the Battleford office was asked for but not made available. As reported by me in November last, I inspected this building thoroughly, taking a carpenter with me. It was found to be in a bad condition throughout, the carpenter stating that even the heating plant would not do the work effectively unless the whole building was clapboarded, and the floors renewed, which work would cost an additional $500. Rather than expend so much money in repairing an old building of faulty construction, I would suggest that it be sold, and removed, and a new building erected under charge of the Clerk of Public Works, who resides in Regina. This in the end would be cheaper and much more satisfactory.

At Saddle Lake, the kitchen attached to the building has fallen away (it was a portion of the former office) and an expenditure of $100 will be required to make the necessary repairs.

For the Onion Lake building a kitchen is required, the estimated cost being $350.

The building at South Humboldt, while of good costruction, is difficult to heat, the agent and family suffering from cold. I would recommend the installation of a furnace, the cost of which would be approximately $500.

EDMONTON-DUNVEGAN SECTION.

This line has worked most satisfactorily throughout the entire year, interruptions being practically nil. Business has increased by leaps and bounds, almost the entire volume of which is transacted with Edmonton. The time of the agent here is occupied almost exclusively by this line, giving him little opportunity to attend to other branches. The superintendent's office has taken charge of his books, else he could not possibly get through the work. Should business continue to increase in the same ratio an assistant will be found necessary, the counter taking up considerable time, which cannot be spared from the instruments. Immigrants are pouring into the north country and this season promises to break all records in the number of new settlers. It is safe to say that the telegraph line has been the most potent factor in bringing about this result. Previous to the advent of the line it took weeks—sometimes months to secure the information which may now be obtained in a few minutes.

The inrush of settlers has had the effect of greatly increasing the cost of maintenance, particularly in the matter of provender for our horses. Hay sells as high as $30 a ton, oats $1.50 to $3 per bushel, there being no established prices.

BUILDINGS.

Our building at Peace River crossing is about completed, while arrangements have been made for the immediate construction of buildings at Grouard and Sawridge. There being now a permanent office at Mirror Landing, where the office accommodation is most inadequate, I would recommend the erection of a building. A suitable office similar to that at Sawridge could be built for $1,500. At Dunvegan, an office building similar to those at Grouard and Peace River crossing should be constructed, the cost of which would be about $3,500. A similar building should also be erected at Grande Prairie, to which point the line will be completed about August next. At Athabaska Landing, a stable should be built for the accommodation of our horses: this would cost $400.

WOOD MOUNTAIN SECTION.

During the year this line was renewed for a distance of 46 miles, new poles erected and the line removed to the highway. It is proposed to continue this work during the coming season, when a practically new line will have been constructed throughout. The volume of business done continues to increase. An office, on a commission basis, has been opened at Expanse, midway between Moosejaw and Limerick. The task of looking after such a length of wire (172 miles) proving too much for one man, an additional lineman has been appointed, with headquarters at Expanse.

BUILDING REPAIRS.

Our building at Willow Bunch is badly in need of repairs. The roof is in such bad condition that the rain comes through, the building should be replastered throughout, and other minor repairs made. A sum of $500 should be appropriated for this purpose.

NEW LINES—EDMONDTON-DUNVEGAN.

The Edmonton-Dunvegan line is at present being extended from Dunvegan to Grande Prairie, a distance of 65 miles. This work should be completed by August first, and will give telegraph connection to the largest settled district of the north country.

BATTLEFORD-ILE LA CROSSE.

Work has been resumed on the Battleford-Ile La Crosse line, and it is expected that it will be completed this season as far as Green Lake, a distance of 160 miles north of Battleford; the gap between Battleford and Meadow Lake, 115 miles north, will be completed by July first, when offices should be opened at North Battleford, Meota, Jackfish and Meadow Lake. At the two latter points it will be necessary to build offices, there being no quarters available.

ATHABASKA LANDING-FORT MCMURRAY.

Alternative routes for this proposed line are from Athabaska Landing, following the Athabaska river in a general way, and from Saddle Lake, the latter route not touching the river. Explorations have been made by Mr. E. D. Currier, but no decision has yet been arrived at. The country through which the line would pass is as yet unsettled.

ST. PAUL-DURLINGVILLE LINE.

The poles and material for this line are now on the ground. Immediately the frost is out of the ground, holes will be dug and an office installed at Durlingville. A further extension from Durlingville to Cold Lake is proposed, the distance being approximately 22 miles.

Owing to the increased cost of living, and the great demand for labour in western Canada, it is becoming increasingly difficult to obtain competent employees for the salaries hitherto paid. I would again recommend that in all cases of linemen and agents, not provided with a residence, the salary paid should be a minimum of $75 per month, otherwise we are likely to lose some of our best men.

KAMLOOPS—OKANAGAN TELEGRAPH LINE.

Mr. Stevens having resigned his position as superintendent on May 1, last, I took charge pending the appointment of a new superintendent. Mr. L. A. Palmer was

appointed to the position, taking charge on June 1. The wires of this division are carrying all the business possible, and during the busy seasons more business is offered than can be taken care of. The completion of the additional telegraph line now under construction from Penticton to Kelowna, thus giving direct communication with Vernon, will aid greatly in preventing delay in the transmission of messages. It will probably be found necessary to install additional telephone exchanges at various points, in order to relieve the pressure on the long distance wire.

Here, as elsewhere, the work of the superintendent is on the increase, a capable assistant being absolutely necessary to enable him to exercise a general supervision over his work.

VANCOUVER ISLAND LINES.

I found time for only a hurried visit to the lines in Mr. Henderson's superintendency. The work is constantly increasing, while the demand is for new lines and extensions. At the time of my visit, all wires were working satisfactorily.

I have the honour to be, sir,
Your obedient servant,

J. S. MACDONALD,
General Inspector.

REPORT No. 10.—BRITISH COLUMBIA.

VICTORIA, B.C., April 20, 1912.

D. H. KEELEY, ESQ.,
General Superintendent Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—I have the honour to submit the annual report upon the telegraph and telephone lines under my charge for the year ending March 31, 1912.

VANCOUVER ISLAND LINES.

The lines embraced under this heading are as follows: Victoria and Cape Beale Telegraph Line, Alberni and Cape Beale Telegraph Line, Alberni and Clayoquot Telegraph Line, Nanaimo and Comox Telegraph Line (including branch to Alberni, Denman and Hornby Island Telephone branch from Union Bay, extension of line from Courtenay to Campbell River and Comox, Cape Lazo branch) Campbell River-Powell River-Texada Island line, Nanaimo and Gabriola telephone line.

During the year, all these lines were consolidated under the heading of Vancouver Island lines for convenience in accounting, &c., but for the purposes of this report, can best be dealt with separately, as on most of them considerable reconstruction and general repairs have been executed for which appropriations were specially voted.

VICTORIA AND CAPE BEALE SECTION.

This section of the Vancouver Island lines has worked better during the year than at any previous time and with the exception of the times when unusually heavy weather prevailed, when it would be out of commission for perhaps a day or two at a time, we have had as good service as given by any commercial companies.

Every section from Victoria to Banfield has been improved by renewing of poles and wire, making trails better, bridging many small ravines and gullies, as far as

the appropriation would permit. Our telephone circuit between Victoria and Jordan River, with connection at Victoria to the British Columbia Telephone Company's system and their long distance lines, continues to give the liveliest satisfaction, fish trap owners, mill men and logging camps, as well as private individuals, expressing great satisfaction at the service. This telephone circuit also permits the use of our telegraph wire for telegraph purposes exclusively and is a great relief to the operators who were frequently interrupted by the rings from the telephones coming in on their instruments while sending or receiving by telegraph. During a few months in the summer, considerable interruption to the line was given by the Canadian Northern railway construction workmen by careless blasting, also by the Esquimalt Waterworks Company when laying a new pipe from Victoria to Goldstream, their trench being alongside of our poles for a distance of over eight miles, and from the same cause as the Canadian Northern Railway Company. This work is now completed and it is hoped no more interference of this kind will be felt.

It was hoped that the new trail being built by the Marine and Fisheries Department along the shore from Banfield to Bonilla Point, seven miles east of Carmanah lighthouse, would have been nearly finished, but very little has been done to extend it during the year, most of the work being done to improve the portions already built. Wherever possible our line has been transferred to the trail, but there is a large portion of it quite untouched and the route not definitely located, a distance of probably twenty miles, so that only such necessary work as was absolutely required to keep the line in good working order was done on that portion; the portion referred to is one of the roughest and hardest to maintain on the whole line extending from Tsusiat River, some five miles west of Clo-oose to Bonilla Point, seven miles east of Carmanah, or about twenty miles in all. As the line from Banfield to Cape Beale lighthouse is solely for the use and convenience of the Marine and Fisheries Department, Capt. Robertson, agent of that department at Victoria arranged to have the crew of the lifeboat stationed at Banfield, attend to the repair and maintenance of same for the future.

ALBERNI AND CAPE BEALE SECTION.

This line has been thoroughly overhauled and wherever possible transferred to the water's edge, and our line repairers supplied with motor launches. Repairs are, and will be made much more expeditiously than in the past. A great improvement in this respect has been manifested since the Department has had its own line repairers attending to maintenance and repair, whereas communication would be interrupted for days and sometimes weeks, now trouble is cleared at the most in a few hours.

ALBERNI AND CLAYOQUOT SECTION.

The work of transferring this line to the water's edge and where not possible to do this, putting the trails in better condition, has been carried-on on all the various portions of this section. Much remains to be done, and it is hoped that this will be accomplished during the coming summer. The launches supplied to line repairers have been of great service in repairing breaks quickly and in many other ways. Good service has been secured over this section since the Department has had its own line repairers looking after the portion of the Alberni and Clayoquot section from Port Alberni to Franklin creek, where the cable crosses the Alberni canal. Complaints from the line repairers west of this were numerous last year, that they had to travel over their sections needlessly in search of trouble which was ultimately found to be on the portion between Port Alberni and Franklin creek, and which was under the care of the Canadian Pacific Railway line repairers. These complaints have now ceased. Much work in improving trails has been done on all the

portions of this section, but mostly on the part in charge of line repairer Williams, which is very rough and rugged, all of which will make for the improvement of the line and the service generally. This work should be continued during the coming summer until the whole line is put in first-class condition. The line from Ucluelet to the lifeboat station, coxswain's house and look-out station some four miles long being solely for the use of the Marine and Fisheries Department. Capt. Robertson, the agent at Victoria, has made the same arrangements as to its maintenance and repair as were made in connection with the lighthouse and lifeboat station between Banfield and Cape Beale. The lifeboat crew will therefore look after and maintain this line hereafter, and as the coxswain in charge of the crew is a telegraph operator and line repairer at one time in our service, this line will be well looked after.

NANAIMO-COMOX-CAMPBELL RIVER LINE.

The service given over this line continues to give the very best of satisfaction to the public. The line has been changed in several places owing to the British Columbia Government changing the location of the trunk road, a portion of the line between Qualicum and Union Bay has been re-poled and much work of this kind will be necessary at various points this summer. So much trouble has been caused by crosses between the British Columbia Telephone Company's line, the railway company's line and our own where all three lines are on the same poles on the railway between Union Bay and Cumberland, that our line repairer on the section referred to has advised that our line should be placed on our own poles on the main trunk road, he also reports that very soon, in any case, the poles and wire would require to be renewed. Considerable changes in the location of the trunk road from Courtenay to Campbell river are contemplated and it is expected that the railway now building from Parksville to Campbell river will also entail considerable interruptions and changes, but it is hoped not much of the latter will be felt this year.

The telegraph office at Union Bay was completely destroyed by a flood caused by the bursting of a dam in the month of February last. Temporary office accommodation being secured in the customs office there.

UNION BAY, DENMAN AND HORNBY ISLAND LINE.

The line from Union Bay to Denman and Hornby islands continues to give satisfaction to settlers and others on the islands, being subject to very few interruptions.

COMOX, CAPE LAZO LINE.

This line primarily built for the purpose of giving connection to the wireless station at Cape Lazo has not produced much revenue. Recently application has been made by several farmers living along the line for telephone connection. This matter is now being investigated and the possibilities are that some revenue will be received from this line in the near future.

NANAIMO AND GABRIOLA ISLAND LINE.

Very few interruptions have occurred on this line during the year and the service given has been very satisfactory to the settlers. An additional office has been opened, a reference to which will be found in the list of offices, &c., attached.

CAMPBELL RIVER-POWELL RIVER-TEXADA LINE.

During the year 1910 the Nanaimo-Comox-Campbell River line was extended to Powell river, giving connection to Valdez, Mary and Cortez islands, also to the important port of Lund, the land line on Texada Island being constructed, but owing to shortage of cable could not be connected to the main line at Powell River. During the autumn of 1911, the cable for this stretch was successfully laid under the direction of Mr. A. V. Porter, our lineman on the steam launch *Alberta*. Several serious interruptions occurred on this section of the Vancouver Islands lines, one of which was caused by induction from the power lines of the Powell River Pulp and Paper Company at Powell River; this has now been overcome, and no difficulty will arise from this source in the future. Another was caused by a defect in the cable between Turn point on Cortez Island and mainland of British Columbia, this was eventually discovered to be caused by the breaking of one of the old splices in the cable sent from Halifax. Our Mr. Porter picked up the cable and buoyed same, cutting out the defective part and putting in another piece of spare cable which had been left over from the Powell river-Texada stretch. Serious complaint was made by the Powell River Company at the delays, but when it was explained to them that in the first instance their wires were the cause of the trouble, and in the second instance it was entirely unavoidable, they were completely satisfied. It has been our aim to give the very best service possible to Powell river, realizing the vast interests involved in this enterprise. Since the defective splice has been cut out the line has been working in the most satisfactory manner. I would respectfully point out that the apparatus for laying cable in British Columbia waters generally is very primitive and cable laying is attended not only with risk of loss of apparatus and the cables, but with great risk of loss of life to those engaged in the work.

VANCOUVER ISLAND AND SALT SPRING ISLAND TELEGRAPH LINE.

Galino island has again been shut off from communication on account of the breaking of the cable between Mayne island and Galino island. It is now proposed to lay a cable outside of the mouth of the narrow pass between these two islands instead of directly across as before, the cable to be laid in the form of a crescent, far enough away from the mouth of the pass to prevent the swift tides from having any effect upon it. In the meantime settlers on Galino island are compelled to row from their island to either Point Comfort lighthouse or Mayne Island hotel, when they wish to send a message and when receiving a message have to pay special delivery charges from either of the offices named. All other portions of this line have received first class service, except for the handicap in connection with the agent at Duncans, which will now soon be remedied by having our own operator and office there. The line is in first-class condition, having been thoroughly overhauled by lineman Porter, and temporary repairs made by local linemen from time to time.

GOLDEN AND WINDERMERE LINE.

Considerable interruption was caused by the survey and construction force of the Kootenay-Central Railway Company, and the roadwork of the Provincial Government. In addition, the destruction by fire of the office at Golden caused considerable delay and some inconvenience, otherwise the service on this line has been of a very satisfactory character. Applications for telephone service continue to be received from time to time, both on the exchanges at Golden and Wilmer, but not on the main line between Golden and Wilmer. A number of poles have been reset during the summer on the main line, these cannot be reset again and it will be necessary to repole the

whole line in another year or so. A full list of agencies and subscribers, &c., will be found attached.*

SIDNEY AND SIDNEY ISLAND LINE.

No interruptions have occurred on this line during the year, and the service given has been a continued source of satisfaction to the firms doing business on Sidney island.

VICTORIA AND METCHOSIN LINE.

Operated and maintained by the British Columbia Telephone Company.

CHEMAINUS-KUPER AND THETIS ISLAND LINE.

The land lines on Kuper and Thetis island were constructed under the direction of Mr. A. V. Porter, line repairer, but as the stretch of cable for the channel between Kuper and Thetis island and Chemainus on the mainland of Vancouver island has not yet arrived, connection could not be made. The settlers on these islands are very anxious to be placed in touch with civilization by means of this line and cable and the British Columbia Telephone Company's long distance line at Chemainus, and have from time to time written inquiring as to the probable date upon which connection would be made, but as I understand the cable is to come from England, I could not give any definite date.

I have the honour to be, sir,

Your obedient servant,

WM. HENDERSON,

District Superintendent Government Telegraphs.

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*The tabular statements of staff, &c., are included with others in the appendix to the general report (1911-12).

REPORT No. 11.—KAMLOOPS-PENTICTON.

KAMLOOPS, B.C., March 31, 1912.

D. H. KEELEY, Esq.,
General Superintendent, Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—In submitting to you my first annual report of the telegraph and telephone lines in the Kamloops-Okanagan district, I beg to remind you of the shortness of the actual working period, and also of the unusual difficulties by which our work has been hampered. As the present superintendency began June 1 and was attended by the transfer of the district superintendent's office from Summerland to Kamloops, considerable delay was experienced in getting supplies and material together for effective operations.

There being no arrangements in hand for outside work and no men immediately available, also because of the fact that the two appropriations in hand were only partly available, it became necessary for me to go over each section of the line before deciding what portions of the work were most pressing and how these should be undertaken. As a result of this inspection it was decided with the approval of the department, that instead of attempting, with the funds in hand, to reconstruct a short section of the line between Nicola and Penticton, to make general repairs, resetting poles where possible, and so extend the work over the section from Penticton to Lumby, also.

A portion of these general repairs was made necessary by the changing of the highway in places, leaving our pole line either a distance away on private lands or making it necessary to remove the poles in order to proceed with the road work. This brushing up which began September 1 and extended to the middle of November when the early winter storms made further progress impracticable, gave us a good start for winter, and although in a few places poles went down from wind or trees, the line as a whole has been in exceptionally good working order and the service very satisfactory.

Owing to the fact that only a little over $2,000 was available for the construction of the projected line to Savona and Walhachin, no work could be undertaken before commencement of winter. Most of this available fund was used in the purchase of material by the department, and at present we have in store at Kamloops, wire, side blocks and insulators for completion of thirty miles of line. As soon as the new estimates are voted, work will begin on the construction of this line.

Our most urgent need at present is for additional line service in the Okanagan valley, perhaps the most important section of the district. The work begun in 1910 on the second circuit between Vernon and Penticton was not included in the appropriations for 1911 and so has been delayed. This work will be resumed as soon as the new appropriation is in hand and when completed will give adequate means for handling the increasing telegraph and conversation business.

New towns are springing up along these lines and calling for means of communication, while some of the older towns are increasing in population and business enterprise and are urging for larger accommodations and longer hours of service. The latter is particularly true of Kamloops, Merritt, Princeton and Vernon.

Along the North river line which was built in 1909-1910, considerable temporary work has been made necessary and ultimately a good deal of reconstruction will have to be done, on account of the public roadway having been adopted as the right-of-way for the Canadian Northern Railway. When grading is completed and the new

road built, quite an amount of re-poling will be required to put this line in proper shape.

Activity abounds all along this line, railway construction, commercial and agricultural development keeping pace with each other.

The Kamloops Grande Prairie Vernon line has not as yet developed a large amount of business, although the isolation of its constituency makes it almost invaluable to the settlers. The direct connection between Kamloops and Vernon is greatly appreciated. The next few months will witness the beginning of the proposed electric railway between Kamloops and Kelowna and undoubtedly a rapid development of this section of country.

All of which is respectfully submitted.

L. A. PALMER,

District Superintendent.

NOTE.—Tabular statements of staff, &c., are included with others in appendix to the general report 1911-12.

REPORT No. 12.—YUKON.

VANCOUVER, B.C., July 12, 1912.

D. H. KEELEY, ESQ.,
General Superintendent Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—I beg to submit herewith my annual report covering the operation of the Yukon and Northern British Columbia lines for the fiscal year 1911-12.

MAIN LINE: ASHCROFT-INTERNATIONAL BOUNDARY.

Weather conditions along the main line during the past year were exceptionally favourable and, as a consequence, the interruptions were infrequent.

Along the Yukon river and in the Bulkley valley some damage was caused by bush fires, but temporary repairs were quickly made. In the Yukon district where the greatest damage was done, temporary repairs were made by local linemen and permanent repairs and reconstruction, where necessary, by the general repair gang which goes over the line in that district every year during the summer months.

A repair party was also sent over the section between Telegraph creek and Echo lake repairing the trail and line, snow slides during the winter months having taken away portions of the trail along the mountain sides, also breaking poles and wire. It was only possible to effect temporary repairs until after the snow had gone.

Considerable activity in prospecting and development work took place during the past summer by parties interested in the anthracite coal-fields in the Groundhog basin, adjacent to our Fifth Cabin office; and during the winter months quite a few men have been employed in that district by the interested companies and individuals. As a consequence, not a little revenue has accrued to our line at Fifth Cabin and offices between that point and Hazleton, where the revenue heretofore has been practically nil.

It is expected that development work on a large scale will be undertaken during the coming summer, and, while the advantage and convenience of having telegraph facilities as close as Fifth Cabin is appreciated, there is a movement on foot to petition

the department to build an extension from Fifth Cabin to a point in the centre of the coal-fields, and about forty miles distant in a northwesterly direction.

The number of new people coming into the district between Hazelton and Quesnel has increased the traffic of the line to a great extent. While railway construction through the Bulkley and Nechako districts is responsible for a great deal of this new business, not a little comes from permanent settlers who have taken up land along the railway and telegraph line.

No repairs of a general nature were undertaken on the section between Hazelton and Quesnel, but next season considerable repoling and resetting will be necessary, and for this work an appropriation is being asked.

Between Quesnel and Ashcroft the line, in places, had become weakened by the poles again rotting at the surface of the ground, and as they had been reset several times between Ashcroft and Clinton, it was found necessary to repole that entire section, thirty-four miles. Next season the section between Clinton and 150-Mile House will require to be completely repoled, and in the following season, that section between 150-Mile House and Quesnel.

HAZELTON-PORT SIMPSON-PRINCE RUPERT BRANCH.

As railway construction along this line was completed this year, we were enabled to close several temporary offices and employ the men elsewhere. The line is in good condition.

Business has continued to increase at Prince Rupert and other points on this branch and a further increase is expected the coming year.

HORSEFLY BRANCH.

The condition of this line is satisfactory, few interruptions having occurred during the past year.

LILLOOET BRANCH.

This line is in fairly good condition, but will require an overhauling the coming season. Business has increased on this branch and should continue to increase with the advent of Grand Trunk Pacific Railway construction at Lillooet next year.

BARKERVILLE BRANCH.

The poles along this line are again showing the effects of dry rot and a great many were reset during the past year.

An appropriation for general repairs is being asked for, as further resetting and repoling will be necessary to place the line in good condition.

STEWART BRANCH: KITSUMKALUM-STEWART.

Construction work on this line which had been closed down in December owing to weather conditions, was resumed in April by two gangs operating from Alice Arm and Cedar river respectively, and the line was completed August 31.

Offices were opened at Cedar river, in the Kitsumkalum valley; Aiyansh on the Naas river, Alice Arm, Goose Bay and Stewart.

The greatest obstacles had to be surmounted in constructing this line over the Alice Arm and Maple Bay divides. It was not possible to use horses, and every pound of material and supplies had to be packed on men's backs, making the work slow and expensive.

Through the Kitsumkalum valley wagon roads had to be made, bridges built and corduroy laid through swamps to get material and supplies forward; but in

this respect the expense of construction is repaid in the maintenance, fewer men being required and the right-of-way being sufficiently wide to reduce the danger from falling timber to a minimum and enabling the linemen to patrol their sections with the least possible delay.

Only a few interruptions occurred on this branch during the winter months and these were occasioned by snow slides along the Portland canal.

By referring to the comparative statement accompanying this report, you will note that the traffic on the system as a whole, again shows a substantial increase over the previous year, the total revenue being $129,596 as compared with $118,574.26 for last year; the number of messages shows a corresponding increase.

With the inauguration of the night letter service after the first of the fiscal year, the line will be taxed to its utmost capacity, and while it will no doubt increase the revenue as well as the business, we will be hard-pressed during the summer months to keep business moving on time with day and night-staffs at repeater and terminal offices.

In connection with the operation of the line, no little credit is due to our managers, operators and linemen for their conscientious and efficient work, as without that assistance, which they so unselfishly give at all hours and under all conditions, it would not be possible to handle the large volume of business which has passed over the line during the past year, with the same degree of satisfaction to the public and the officials of the service.

Yours very truly,

J. T. PHELAN,

Superintendent.

YUKON TELEGRAPHS.

ASHCROFT–DAWSON, MAIN LINE.

COMPARATIVE STATEMENT of Revenue, for the Years ending March 31, 1911, and March 31, 1912.

OFFICES.	FISCAL YEAR, 1910-11.			FISCAL YEAR, 1911-12.			SUMMARY.					
							MESSAGES.				REVENUE.	
	Messages.		Revenue.	Messages.		Revenue.	Increase.		Decrease.		Increase.	Decrease.
	Sent.	Rec'd.	$ cts.	Sent.	Rec'd.	$ cts.	Sent.	Rec'd.	Sent.	Rec'd.	$ cts.	$ cts.
Ashcroft, B.C.	24,996	30,251	25,352 25	27,427	33,376	27,570 69	2,431	3,125	.....	.....	2,218 44	
Alexandria, B.C	111	76	32 11	.....	.....	.....	.....	.....	111	76	.....	32 11
Anders, B.C.	(Formerly Alexandria).			145	90	58 29	145	90	.....	.....	58 29	
Aldermere, B.C.	1,027	915	1,326 82	1,116	1,043	1,278 97	89	128	.....	.....	.....	47 85
Atlin, B.C.	622	476	1,609 81	681	522	1,672 61	59	46	.....	.....	62 80	
Big Salmon, Y.T	7	8	2 50	5	8	7 00	.....	.....	2	.....	4 50	
Blackwater, B.C.	1,253	1,072	553 54	2,658	2,322	951 97	1,405	1,250	.....	.....	398 43	
Bobtail Lake, B.C.	77	50	82 53	75	34	60 16	.....	.....	2	16	.....	22 37
*Bonaparte, B.C.	97	65	32 54	.....	.....	.....	.....	.....	97	65	.....	32 54
Boundary, N.Y.T	1,619	1,235	.....	1,405	1,300	.....	.....	65	214	.....	.....	
Burns' Lake, B.C	91	84	98 13	150	117	171 38	59	33	.....	.....	73 25	
Carcross, Y.T.	312	286	544 67	527	434	1,306 01	215	148	.....	.....	761 34	
Clinton, B.C.	1,671	1,431	750 21	1,664	1,496	783 78	.....	65	7	.....	33 57	
Coffee Creek, Y.T.	17	14	30 21	78	40	66 47	61	26	.....	.....	36 26	
Dawson, Y.T.	5,653	5,361	28,205 17	5,416	5,095	28,565 77	.....	.....	237	266	360 60	
Dougherty's, B.C.	(Office opened Nov. 10, 1911).			34	48	8 75	34	48	.....	.....	8 75	
Echo Lake, B.C	6	5	5 51	3	0	5 42	.....	.....	3	5	.....	09
Eighth Cabin, B.C.	.....	.....	.....	6	2	17 69	6	2	.....	.....	17 69	
Fifth Cabin, B.C	14	9	85	62	29	177 14	48	20	.....	.....	176 29	
Fort Selkirk, Y.T.	144	125	196 04	141	138	195 12	.....	13	3	.....	.....	92
Forty Mile, Y.T.	336	218	431 78	334	215	407 42	.....	.....	2	3	.....	24 36
Fourth Cabin, B.C.	13	13	2 66	31	25	27 56	18	12	.....	.....	24 90	
Fraser Lake, B.C.	391	378	457 01	329	346	358 42	.....	.....	62	32	.....	98 59
*Glentanna, B.C.	30	13	62 78	.....	.....	.....	.....	.....	30	13	.....	62 78
Hazelton, B.C.	5,645	5,962	8,045 24	8,231	8,263	11,898 93	2,586	2,301	.....	.....	3,853 69	
Hootalinqua, Y.T.	92	51	101 02	64	51	51 15	.....	.....	28	.....	.....	49 87
Isokot, B.C.	7	4	14 65	4	6	9 92	.....	2	3	.....	.....	4 73

Kispiox, B.C.	44	57	29 20	57	60	34 08	13	3	.....	.....	4 88	
Lower Laberge, Y.T.	89	72	84 14	176	130	191 33	87	58	.....	.....	107 19	
Lyne's, B.C.	73	50	49 72	120	92	45 49	47	42	.....	.....	.....	4 23
Moffat's, B.C.	51	57	32 65	78	56	32 11	27	.....	.....	1	.....	54
Moricetown, B.C.	64	48	43 55	98	67	87 81	34	19	.....	.....	44 26	
Nahlin, B.C.	6	8	2 57	15	8	17 32	9	.....	.....	.....	14 75	
Nakina, B.C.	6	2	1 00	7	5	6 99	1	3	.....	.....	5 99	
Nechako, B.C.	267	273	347 27	249	215	241 07	.....	.....	18	58	.....	106 20
Ninth Cabin, B.C.	6	2	5 66	9	2	7 66	3	.....	.....	.....	2 00	
Ogilvie, Y.T.	12	10	4 05	61	37	32 92	49	27	.....	.....	28 87	
59 Mile House, B.C.	41	37	23 05	94	67	23 03	53	30	.....	.....	.....	02
70 " "	257	171	94 12	141	65	37 69	.....	.....	116	106	.....	56 43
74 " "	42	26	35 03	42	47	11 66	.....	21	.....	.....	.....	23 37
83 " "	242	192	87 49	197	202	58 46	.....	10	45	.....	.....	29 03
100 " "	46	40	33 39	83	69	29 24	37	29	.....	.....	.....	4 15
105 " "	75	45	54 67	176	161	91 06	101	116	.....	.....	36 39	
115 " "	576	372	278 77	552	343	307 60	.....	.....	24	29	28 83	
134 " "	65	50	35 18	101	79	36 86	36	29	.....	.....	1 68	
141 " "	71	73	40 49	179	160	80 05	108	87	.....	.....	39 56	
150 " "	1,719	1,700	1,049 56	1,807	1,601	1,065 02	88	.....	.....	99	15 46	
158 " "	(Office opened April 14, 1911).			109	126	68 67	109	126	.....	.....	68 67	
Quesnel, B.C.	3,719	3,642	3,747 60	3,635	3,236	2,832 72	.....	.....	84	406	.....	914 88
Second Cabin, B.C.	6	3	3 94	27	19	16 56	21	16	.....	.....	12 62	
Shepherd's, B.C.	1	2	.....	79	75	56 30	78	73	.....	.....	56 30	
Shesley, B.C.	7	8	1 00	9	3	65	2	.....	.....	5	.....	35
Seventh Cabin, B.C.	1	2	25	4	2	1 54	3	.....	.....	.....	1 29	
Sixth Cabin, B.C.	4	2	31	16	11	5 79	12	9	.....	.....	5 48	
Soda Creek, B.C.	1,733	1,382	991 22	928	942	461 09	.....	.....	805	440	.....	530 13
South Bulkley, B.C.	90	83	94 73	104	87	92 28	14	4	.....	.....	.....	2 45
Stewart River, Y.T.	99	55	108 11	208	152	231 14	109	97	.....	.....	123 03	
Tagish, Y.T.	11	4	14 32	.....	1	.....	.....	.....	11	3	.....	14 32
Tantalus, Y.T.	39	37	77 50	68	54	124 16	29	17	.....	.....	46 66	
Telegraph Creek, B.C.	182	215	472 76	219	244	558 21	37	29	.....	.....	85 45	
Telkwa, B.C.	461	416	664 80	578	491	617 12	117	75	.....	.....	.....	47 68
Third Cabin, B.C.	8	7	1 60	11	12	12 58	3	5	.....	.....	10 98	
25 Mile Cabin, B.C.	4	1	7 53	2	0	2 99	.....	.....	2	1	.....	4 54
White Horse, Y.T.	1,643	1,676	3,701 07	1,736	1,872	3,685 12	93	196	.....	.....	.....	15 95
Windt's, B.C.	28	19	12 43	40	46	15 96	12	27	.....	.....	3 53	
Yukon Crossing, Y.T.	88	101	124 03	96	77	108 81	8	.....	.....	24	.....	15 22
Yorston's, B.C.	39	30	25 83	183	174	105 26	144	144	.....	.....	79 43	.....
Totals	56,146	59,072	80,318 62	62,880	66,090	87,085 02	8,640	8,666	1,906	1,648	8,912 10	2,145 70

YUKON TELEGRAPHS.

HAZELTON--PRINCE RUPERT BRANCH.

COMPARATIVE STATEMENT of Revenue, for the Years ending March 31, 1911, and March 31, 1912—*Continued.*

OFFICES.	FISCAL YEAR, 1910-1911.			FISCAL YEAR, 1911-1912.			SUMMARY.					
							MESSAGES.				REVENUE.	
	Messages.		Revenue.	Messages.		Revenue.	Increase.		Decrease.		Increase	Decrease.
	Sent.	Rec'd.	$ cts.	Sent.	Rec'd.	$ cts.	Sent.	Rec'd.	Sent.	Rec'd.	$ cts.	$ cts.
[1]Aberdeen, B.C.												
[2]Andemaul, B.C.												
*Batemans, B.C.	16	15	8 79						16	15		8 79
Bostrom's, B.C.	364	242	249 39	528	372	345 67	164	130			96 28	
Cassiar, B.C.	61	58	94 13	87	86	140 13	26	28			46 00	
Cedarvale, B.C.	278	224	167 71	198	159	133 49			80	65		34 22
*Clearwater, B.C	217	124	104 74						217	124		104 74
Copper River, B.C.	335	231	201 38	732	539	558 03	397	308			356 65	
Digby, Island, B.C.	331	178		715	274		384	96				
Georgetown, B.C.	43	40	107 13	26	25	96 80			17	15		10 33
Graveyard Point, B.C.	258	139	132 31	42	27	25 31			216	112		107 00
Hardscrabble, B.C.	481	446	345 27	639	528	404 00	158	82			58 73	
Haysport, B.C	788	798	1,061 06	590	607	801 86			198	191		259 20
Hole-in-Wall, B.C	386	211	215 46	156	129	95 26			230	82		120 20
Inverness, B.C	100	83	152 66	107	89	177 66	7	6			25 00	
Kitselas, B.C	3,375	2,501	2,420 90	3,701	2,189	1,996 55	326			312		424 35
Kitsum Kalum, B.C	834	587	416 79	700	643	484 92		56	134		68 13	
Lorne Creek, B.C	266	222	169 21	320	250	181 20	54	28			11 99	
[3]Meanskinisht, B.C	(Name changed to Cedarvale.)											
McHugh's, B.C	149	104	130 84	280	178	174 06	131	74			43 22	
McLeod's, B.C	78	24	32 54	10	6	6 47			68	18		26 07
New Hazelton, B.C.	(Office opened Dec. 31, 1911.)			1,235	1,326	1,923 51	1,235	1,326			1,923 51	
North Pacific, B.C.	83	51	160 60	66	48	105 87			17	3		54 73
Port Simpson, B.C.	689	548	692 51	452	379	467 43			237	169		225 08
Prince Rupert, B.C.	17,312	17,359	27,565 60	19,062	18,435	29,411 44	1,750	1,076			1,845 84	
Shandilla, B.C.	465	295	388 80	502	420	289 85	37	125				98 95
Sheady's, B.C.	206	150	153 27	223	156	72 84	17	6				80 43
Telegraph Point, B.C.	118	75	73 06	98	48	57 28			20	27		15 78
Van Arsdol, B.C.	(Office opened March 30, 1912.)			2	1	2 87	2	1			2 87	
Totals	27,233	24,705	35,044 15	30,471	26,914	37,952 50	4,688	3,342	1,450	1,133	4,478 22	1,569 87

BARKERVILLE BRANCH.

Barkerville, B.C.	1,275	1,302	1,300 96	1,173	1,191	1,273 70			102	111		27 26
Cottonwood, B.C	127	144	59 04	113	110	43 92			14	34		15 12
Locke's, B.C.	77	92	23 47	54	67	24 20			23	25	0 73	
Stanley, B.C.	450	302	346 74	275	169	231 77			175	133		114 07
Wingdam, B.C.	242	216	146 10	37	45	11 50			205	171		134 60
Totals	2,171	2,056	1,876 31	1,652	1,582	1,585 09			519	474	0 73	291 95

HORSEFLY BRANCH.

Harper's Camp, B.C.	189	161	116 89	263	217	160 87	74	56			43 98	
Hydraulic, B.C.	698	610	577 28	356	370	306 93			342	240		270 35
Quesnel Forks, B.C.	270	280	128 59	165	141	92 45			105	139		36 14
Totals	1,157	1,051	822 76	784	728	560 25	74	56	447	379	43 98	306 49

LILLOOET BRANCH.

Lillooet, B.C.	533	578	387 54	624	638	468 44	91	60			80 90	
Pavilion, B.C.	87	58	48 20	97	94	63 30	10	36			15 10	
Totals	620	636	435 74	721	732	531 74	101	96			96 00	

LIVINGSTONE CREEK BRANCH.

Livingstone Creek, Y.T.	51	33	76 70	43	22	72 10			8	11		4 60
Mason's Landing, Y.T.	1	1			1				1			
Totals	52	34	76 70	43	23	72 10			9	11		4 60

STEWART BRANCH, (Construction completed in 1911.)

Aiyansh, B.C.				74	50	120 62	74	50			120 62	
Alice Arm, B.C.				49	37	91 11	49	37			91 11	
Cedar River, B.C.				1		2 25	1				2 25	
Goose Bay, B.C.				172	139	324 14	172	139			324 14	
Stewart, B.C.				534	507	1,271 69	534	507			1,271 69	
Totals				830	733	1,809 81	830	733			1,809 81	

* Closed in 1911-1912.

[1] (Name changed to 'Haysport', see Haysport.)

[2] (Name changed 'Shandilla', see Shandilla.)

[3] (Name changed to 'Cedarvale', see Cedarvale.)

YUKON TELEGRAPHS.

SUMMARIES.

Year 1911-1912, as compared with 1910-1911.)

SHOWING INCREASES AND DECREASES IN MESSAGES AND REVENUE.

Main Lines and all Branches.

MAIN LINE—(ASHCROFT-DAWSON).

Net Increase in messages	'Sent'	6,734
" "	'Received'	7,018
" revenue		$ 6,766.40

HAZELTON-PRINCE RUPERT BRANCH.

Net Increase in messages	'Sent'	3,238
" "	'Received'	2,209
" revenue		$ 2,908.35

BARKERVILLE BRANCH.

Net Decrease in messages	'Sent'	519
" "	'Received'	474
" revenue		$ 291.22

HORSEFLY BRANCH.

Net Decrease in messages	'Sent'	373
" "	'Received'	323
" revenue		$ 262 51

LILLOOET BRANCH.

Net Increase in messages	'Sent'	101
" "	'Received'	96
" revenue		$ 96.00

LIVINGSTONE CREEK BRANCH.

Net Decrease in messages	'Sent'	9
" "	'Received'	11
" revenue		$ 4.60

STEWART BRANCH.

Net Increase in messages	'Sent'	830
" "	'Received'	733
" revenue		$ 1,809.81

Total number of messages	'Sent,' for year ending March 31, 1912	97,381
" "	'Received,' for year ending March 31, 1912.	96,802
Total revenue, for year ending March 31, 1912		$ 129,596

General Summary.

Total increase over preceding year—Messages	'Sent'	10,002
" " "	'Received'	9,248
" " Revenue		$11,022.23

J. T. PHELAN,

Superintendent.

REPORT No. 13—CABLE SHIP *TYRIAN*.

North Sydney, C.B., N.S., April 22, 1912.

D. H. Keeley, Esq.,
General Superintendent Government Telegraph Service,
Ottawa, Ont.

Dear Sir,—In addition to the separate reports sent you on the completion of each repair, and the laying of new cables; I beg to submit herewith a summary of the work done by the cable ship *Tyrian* during the year ending March 31, 1912, along with a statement of the different lengths of cable handled.

May 1.—Got ship ready for repair of Crane Island cable.
May 2.—Left North Sydney, met ice and put back.
May 3.—Left North Sydney for river St. Lawrence.
May 6.—Arrived at Crane Island and started repairs.
May 6 to 12.—Repairing Crane Island cable (two breaks).
May 13.—Proceeded to Quebec.
May 14 and 15.—At Quebec.
May 15.—Repaired L'Ange Gardien cable.
May 17, 18.—On way to North Sydney.
May 19.—Arrived at North Sydney and sailed for Halifax.
May 20 to 27.—At Halifax taking aboard cable and undergoing inspection.
May 28.—Sailed for repair of Magdalen Island cable.
May 29.—Arrived at North Sydney.
May 30.—Coaling the ship.
May 31 to June 1.—Repairing Magdalen Island cable.
June 6 and 7.—At North Sydney.
June 8.—Proceeded to Bras D'Or Lakes to lay cable.
June 9 and 11.—Laid cable across Little Narrows and made land connections.
June 12.—Returned to North Sydney.
June 13 to 16.—At North Sydney.
June 17.—Sailed for repair of Gaspé—S.W. Point Anticosti cable.
June 19.—Arrived at Gaspé.
June 20.—Repaired cable.
June 21.—Sailed for repair of Brion island—Grosse Isle cable.
June 22 to 27.—Repairing Brion Island cable.
June 28.—Went to Entry island and installed new telephone.
June 29.—Arrived at North Sydney.
June 30.—At North Sydney.
July 1.—Sailed for Halifax.
July 2.—Arrived at Halifax.
July 3 to Sept. 19.—Ship undergoing repairs at Halifax.
Sept. 20.—Ship proceeded to North Sydney.
Sept. 21.—Arrived at North Sydney.
Sept. 22 and 23.—At North Sydney, coaled the ship.
Sept. 24.—Sailed for Halifax for orders.
Sept. 25.—Arrived at Halifax.
Sept. 26.—Received orders.
Sept. 27.—Sailed for Tancook islands to repair cable.
Sept. 28.—Repaired Tancook cable.

Sept. 29.—Sailed for Port Mouton.
Sept. 30 to Oct. 1.—At Port Mouton making survey.
Oct. 2.—Sailed for repair work at Grand Manan and St. John.
Oct. 3.—Arrived at Seal Cove, Grand Manan.
Oct. 4.—Went out to Gannet Rock and found a heavy sea on.
Oct. 5.—Weather still bad, went to St. John, N.B.
Oct. 6 to 10.—Repairing Partridge Island cables and putting up cable signs.
Oct. 11.—Went to Seal cove and installed telephone.
Oct. 12 and 13.—Gale of wind and fog.
Oct. 14.—Installed telephones at Grand harbour, Ross island, Cheney's island and White Head island.
Oct. 16 to 18.—Repairing Gannet Rock cable.
Oct. 19.—Repairing White Head Island cable.
Oct. 20 and 21.—Grand Manan to Halifax, N.S.
Oct. 23.—Sailed for repair of Scataree Island cable.
Oct. 24.—In Louisburg.
Oct. 25 and 26.—Repairing Scataree Island cable.
Oct. 27 to 29.—At North Sydney coaling ship, &c.
Oct. 30.—Cleared for Bay St. Lawrence.
Oct. 31.—Landed coal for station and repaired St. Paul Island cable.
Nov. 1, 2 and 3.—Strong gales and heavy sea.
Nov. 4.—Repaired Magdalen Island cable.
Nov. 5 and 6.—At North Sydney taking in water, supplies, &c.
Nov. 7.—Went to Magdalen islands and took paymaster aboard.
Nov. 8.—Sailed for repair of Long Point cable.
Nov. 10.—Arrived at Mechastic bay.
Nov. 11 to 17.—Repaired one break in Long Point cable.
Nov. 18 to 22.—Repaired second break in same cable.
Nov. 23.—Arrived at Brion island.
Nov. 24 and 25.—Attempted to repair Brion Island cable.
Nov. 26.—Arrived at North Sydney.
Jan. 3.—Sailed for Halifax to take aboard new cable.
Jan. 4.—Arrived at Halifax.
Feb. 1.—Lined main tank with heavy galvanized iron.
Feb. 5.—Took cable aboard from ss. *Kanawha.*
March 4.—Put bunker coal aboard the Marine and Fisheries boats and put ballast ashore.
March 5.—Mr. McConkey made inspection of ship's hull.
March 8 and 9.—Preparing cable for shipment to British Columbia.
March 15.—Shipped five reels of cable to British Columbia.

DIFFERENT LENGTHS OF CABLE HANDLED.

		Deep Sea Cable.	Knots.	Knots.
1911.				
May	1	Cable on hand since 1910		4.00
"	15	Crane Island repair, picked up		1.23
		laid down	1.66	
"	16	L'Ange Gardien cable repair, laid down	.75	
"	24	Received from Rapahannock		10.00
June	5	Magdalen Island cable repair, picked up		2.68
		laid down	2.46	
"	9	Little Narrows, new cable, laid down	.10	
"	21	South West Point cable repair, picked up		.30
		laid down	.74	
"	28	Brion Island cable repair, laid down.	.35	
Sept.	3	Sent to British Columbia	2.00	
"	28	Tancook Island cable repair, laid down	.04	
		condemned cable about	.50	
Oct.	10	Partridge Island cables repaired, laid down	.02	
"	12	Gannet Rock cable, extra length at Seal Cove	.03	
"	18	Gannet Rock repair, laid down	.20	
"	19	White Head Island cable repair. laid down	.05	
"	25	Scataree Island cable repair, laid down	2.48	
		picked up		1.93
		condemned	.45	
Oct.	31	St. Paul Island cable repair, laid down	.10	
Nov.	22	Long Point cable repair, picked up		3.12
		laid down	3.92	
		condemned	.25	
Feb.	5	Received from SS. *Kanawha*		12.00
Mch	15	Sent to British Columbia	5.00	
"	31	Deep sea cable left on hand	14.16	
			35.25	35.26

March 31. Shore end cable aboard, about one knot.

I have the honour to be, sir,

Yours faithfully,

A. B. McDONALD,

Electrician C.G.S. 'Tyrian.'

HALIFAX, N.S., April 17, 1912.

D. H. KEELEY, Esq.,
General Superintendent Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—Enclosed please find yearly report of my department from April 1, 1911, to March 31, 1912.

I have the honour to be, sir,

Your obedient servant,

D. A. McDONALD,

Steward, G.S. 'Tyrian.'

CABLE SHIP *TYRIAN*.

HALIFAX, N.S., April 16, 1912.

D. H. KEELEY, Esq.,
General Superintendent Government Telegraph Service,
Ottawa, Ont.

DEAR SIR,—I have the honour to submit herewith memorandum of expenditure covering my department from April 1, 1911, to March 31, 1912.

Boarding crew as per contract.

Cash in advance	$500 00	
April, 1911—As per cheque	889 30	
May, " "	954 60	
June, " "	917 10	
July, " "	836 60	
August, " "	782 60	
September, " "	793 40	
October, " "	880 00	
November, " "	806 70	
December, " "	963 80	
January, 1912—As per cheque	892 50	
February, " "	811 30	
March, " "	866 70	
		$10,894 60
Stores aboard, April 1, 1911		36 74
		$10,857 86

Maintenance and Repairs.

Globe Laundry	$155 80	
Ungar Laundry	146 94	
American Laundry	17 65	
Victoria Laundry	9 50	
J. W. Gilles	18 00	
C. G. Buchanan & Co	10 00	
R. Shean	38 90	
Chas. Allan	32 50	
P. J. Otto	45 00	
Kirk & Whitman	348 36	
Wentzell's, Ltd	88 85	
Hills & Sons	23 30	
J. W. Ingraham	94 05	
James Kelly	48 40	
Vooght Bros	53 65	
Baldwin & Co	108 28	
J. A. Leaman & Co	20 00	
Nova Scotia Furnishing Co	8 25	
		$ 1,267 43
Total		$12,125 29

I have the honour to be, sir,
Your obedient servant,
D. A. McDONALD,
Steward, G.S. 'Tyrian.'

PART VI

REPORT OF THE COLLECTOR OF REVENUE

DEPARTMENT OF PUBLIC WORKS

1911-12

OTTAWA, June 15, 1912.

The SECRETARY,
Department of Public Works, Ottawa.

SIR,—I have the honour of submitting my report for the twelve months ended March 31, 1912.

During the twelve months just closed, the revenue accrued from public works shows an increase of $6,826.51 being $181,253.10, while in the preceding year it was $174,426.59.

The collections show a decrease of $23,639.29 being $171.759.33, while in 1910-11 they amounted to $195,398.62.

The revenue accrued from slides and booms was $90,019.23 or $2,453.43 less than for year ended March 31, 1911.

The collections were $87,789.73 or $27,080.43 less than the previous year.

The outstanding uncollected revenue from slides and booms was increased by $2,188.73.

The graving docks yielded $50,614.84 or $7,738.75 more than in 1910-11.

Rents collected amounted to $33,354.76, a decrease of $4,297.61.

Having dealt with the revenue in a general way, I now submit the particulars, in detail, relative to the several services under their respective heads.

SLIDES AND BOOMS.

OTTAWA DISTRICT.

The tolls charged up amounted to $34,202.88 or $5,933.46 less than in 1910-11.

The number of saw logs that passed through the works was 4,072,106 or 724,864 pieces less than the previous year.

Of square timber there was none.

Of the revenue accrued during the year all but $948.45 was collected.

Of the dues accrued since July 1, 1889, when this department took over the collection, there remains uncollected $9,093.80, full particulars of which will be found in Statement No. 2 herewith.

Of the dues accrued before July 1, 1889, there still remains $56,805.65, all of which should be written off. See statements Nos. 1 and 3 herewith for particulars.

The accounts for the Ottawa district stand thus:—

Dues accrued during the year to March 31, 1912	$34,202	88
Outstanding March 31, 1911	8,296	93
	$42,499	81
Collected	33,365	24
	$ 9,134	57
Written off	40	77
Balance outstanding March 31, 1912	$9,093	80

Being composed of—	
Dues of 1889-90	$6,903 05
" 1890-91	28 42
" 1892-93	379 80
" 1896-97	196 71
" 1903-04	637 37
" 1911-12	948 45
	$9,093 80

Balance of dues outstanding prior to 1st July, 1889, when this department took over the collection $56,805 65

Herewith are statements in detail:—

No. 1.—Statement of amounts outstanding prior to 1st July, 1889, uncollected 31st March, 1912.

No. 2.—Statement of dues accrued at Ottawa since 1st July, 1889, uncollected 31st March, 1912.

No. 3.—Statement of dues accrued at Quebec prior to 1st July, 1889, uncollected 31st March, 1912.

No. 4.—Statement of the number of pieces of square timber, saw-logs, &c., which passed through the Ottawa works during the year ended 31st March, 1912.

No. 5.—Statement of dues accrued from each of the slides and works in the Ottawa district during the year ended 31st March, 1912.

Apart from three accounts amounting to $976.87, all the revenue from the Ottawa slides and booms, since I took charge in 1889, has been collected, excepting such as should have been written off long ago, or a few items in dispute which I expect will have to be forgiven.

The falling off in the revenue from this district is fairly attributable to the low water in the Ottawa river, which necessitated the shutting down of some mills earlier than usual and previous to that the short supply of water curtailed running as the water power diminished, as a matter of fact it has been stated, on good authority, that the cut of the Ottawa Valley in 1911, was about 100,000,000 feet less than that of the previous year.

ST. MAURICE DISTRICT.

The revenue accrued from the district was $50,577.65, being $5,105.47 more than in 1910-11.

The collections amounted to $50,577.65; $1,736.35 less than in 1910-11.

Uncollected of 1909-10 dues, $3,709.62 disputed.

The amount outstanding prior to 1st July, 1892, remains unchanged, viz., $14,-481.49, and should be written off for reasons assigned in statement No. 6 herewith.

The number of pieces of all kinds of timber that passed through the works was equivalent to 5,600,583 pulp and saw-logs, or 161,412 pieces more than the previous year.

The summer of 1911 was rather unfavourable to lumbering on the St. Maurice, for a large number of logs were left in the river last autumn apart from a great number left in the tributaries at the end of the season.

My expectations of last year were realized. In consequence of the policy of the Quebec government, the Gres Falls Company, which formerly shipped very large quantities of pulp wood, have in operation a pulp mill at Pointe Magdelaine, on the east side of the St. Maurice, which will in all probability be enlarged to double its present capacity. The Wayagamac Pulp and Paper Company, who purchased the Alex. Baptist business, are also erecting mills which will shortly be in operation, at Baptist's Island, and it is generally understood that another large milling concern

is looking for a convenient site for the manufacture of pulp to supply their American paper mills, so that, unless all signs fail, the revenue from the St. Maurice works will in all probability keep well up to, if it does not exceed, $50,000 per annum.

NEWCASTLE DISTRICT.

The dues accrued from this district amounted to $1,402.89, being $541.81 less than the previous year, all collected at this date.

The tolls outstanding on 31st March, 1912, amounted to $3,556.89, of which $3,521.19 should be written off in accordance with a judgment in the Exchequer Court; $35.70 will also have to be forgiven, the debtor being a very old man and hopelessly insolvent.

Full particulars of amount outstanding will be found in statement No. 7, herewith.

The decrease is due to one concern having a large stock of logs left over from the previous year, and another firm, rafting their logs and so passing them through the locks.

SAGUENAY DISTRICT.

The dues accrued during the year ended 31st March last amounted to $3,835.81, all paid, being $1,083.63 less than in 1910-11.

The shortage here was due to the smaller number of logs gotten out by the Chicoutimi Pulp Company, mainly, I understand, through the competition of another firm with the settlers from whom the company formerly purchased their logs. For the current year I do not anticipate even as large a revenue, but next year, if they carry out present intentions, another very large firm will bring down a large proportion of their logs through our boom; to meet the requirements of this additional quantity and give larger mooring space below the boom, a bulkhead has been constructed at the outlet of the boom, serving to assist in retaining the logs, and causing a large increase in the area of, comparatively speaking, dead water below the boom.

GRAVING DOCKS.

ESQUIMALT GRAVING DOCK.

The revenue from this service was $16,856.82, being $3,446.31 less than the previous year. (*See* Statement No. 8), of the 129 days the dock was occupied during the year it was used for 14 days by H. M. vessels. The total number of vessels docked was 20 of 60,171 tons.

LEVIS GRAVING DOCK.

The revenue was $3,262.99 more than for the year 1910-11, being $23,753.04. (*See* Statement No. 9.)

During the season of navigation the dock was occupied for 218 days by 14 vessels of 23,750 tons.

During the winter of 1911-12 it was occupied by Steamers *Rapids King* and *Rapids Queen,* SS. *La Canadienne;* dredges *Ottawa* and *Restigouche.*

While this dock is of a sufficient length and width to accommodate many vessels of the larger class, it is unfortunate that the entrance is so narrow (60 feet). In consequence, many dockages that would yield large returns, are lost.

KINGSTON GRAVING DOCK.

The revenue was $10,000.

On the 1st of May, 1910, the Kingston Shipbuilding Company, took possession of the dock under lease, the rental of which, $10,000 per annum, was payable at the end of each year.

RENTS.

With regard to the collection of the rentals under leases granted by this department, which was formerly done by the Inland Revenue Department,—

Statements Nos. 10 and 11 show in detail the condition on March 31, 1912, of the accounts taken over on March 31, 1909, from the Inland Revenue Department.

Statement No. 12 shows condition of land sales and interest account, also from Inland Revenue Department, which shows no change for many years.

Several of the unsettled accounts are of many years' standing, some are under investigation, and others I expect will have to be written off for good and sufficient reasons.

Exclusive of the above-mentioned rentals, the revenue accrued from government properties has become an important item, being, in 1911-12, including two sales and interest, $39,382.44 or $1,788.79 more than in 1910-11.

Of this sum $29,918.76 was collected, $332.25 written off, in lieu of repairs or on account of poverty, and $9,131.43 was outstanding at the close of the year. Of the latter item, I may say that a considerable amount will be recovered, but just how much I am unable at this writing to estimate; when, however, it is considered that many of the properties upon which almost all outstanding rents have accrued were old and mainly sought for by people who could not pay large rents, and as the amount uncollected, after deducting principal and interest not yet due, is but about 6 per cent of the whole, the sum is not so very large, nevertheless this branch (collection of rents) alone is the most troublesome and unsatisfactory part of the duties of this office.

As most of the buildings on Sussex Street have been demolished, many before the 31st of March, 1911, the revenue from this property was but a small item during the current year. The sales of two properties in British Columbia and interest on same kept up the revenue under this head.

STATEMENT of rents collected, public works revenue, during year ending March 31, 1912.

Old post office building, Victoria, B.C.	$ 6,560 00
Sussex street property	6,692 91
Examining warehouse site, Montreal, P.Q.	1,536 00
Portion graving dock premises, Kingston, Ont.	312 50
Part reserve, Victoria Island, Ottawa	2 00
Reserve east side, St. Maurice River	50 00
Office in post office building, Winnipeg, Man.	441 00
Privilege of erecting towers on Burlington Beach	1 00
Island and water power, Calumet channel, P.Q.	25 00
Part reserve, Pond Creek	7 50
Ile Caron, P.Q.	75 00
Part Ile St. Christophe, P.Q.	50 00
Old government house, Yale, B.C.	5 00
Water pipe connection, William Head, B.C.	12 00
Kingston, Ont., land on Clarence street	1 00

For laying tracks on bridge near Edmonton	$	1 00
Part Carrier Lainé property, Levis, Que		240 00
Part graving dock premises, Lévis, Que		1 00
Canal feeder, Catherinestown, Que		1 00
Public building site, Sudbury, Ont		450 00
Court House, Regina, Sask		3,300 00
Sheriff's office, Regina, Sask		1,764 00
Land titles office, Prince Albert, Sask		900 00
Land titles office, Edmonton, Alta		672 00
Court House, Red Deer, Alta		600 00
Old examining warehouse, Winnipeg, Man		40 00
Latchford dam		184 00
Land, Ottawa street, Ottawa		1 00
House at Observatory, Ottawa		300 00
Part immigration building, Port Arthur (John Nelson)		16 00
Wharf at Lévis, P. Q		194 52
Hydraulic rents		3,410 00
Minor public works		26 00
		$27,871 43
Land sale, New Westminster, B.C		3,333 33
Land sale, interest account		2,150 00
		$33,354 76

The following comparative table of Public Works revenue accrued during the year ended March 31, 1912, compared with that of the fiscal year ended March 31, 1911, shows at a glance on what accounts increases and decreases herein reported have occurred:—

—	Year ended March 31, 1912.	Year ended March 31, 1911.	Increase, 1912.	Decrease. 1912.
Slides and Booms.	$ cts.	$ cts.	$ cts.	$ cts.
Ottawa District	34,202 88	40,136 34		5,933 46
St. Maurice District	50,577 65	45,472 18	5,105 47	
Newcastle District	1,402 89	1,944 70		541 81
Saguenay District	3,835 81	4,919 44		1,083 63
	90,019 23	92,472 66	5,105 47	7,558 90
Net decrease, $2,453.43.				
Graving Docks.				
Esquimalt, B.C.	16,856 82	20,303 13		3,446 31
Kingston, Ont	10,000 00	2,077 93	7,922 07	
Levis, Que	23,758 02	20,495 03	3,262 99	
	50,614 84	42,876 09	11,185 06	3,446 31
Net increase, $7,738.75.				
Rents and Sales.				
Hydraulic rents	3,675 00	3,680 00		5 00
Minor public works	26 00	109 34		83 34
Other public properties	36,918 03	35,288 50	1,629 53	
	40,619 03	39,077 84	1,629 53	88 34
Net increase, $1,541.19.				
Accrued.				
Total—Slides and booms	90,019 23	92,472 66		2,453 43
" Graving docks	50,614 84	42,876 09	7,738 75	
" Rents and sales	40,619 03	39,077 84	1,541 19	
	181,253 10	174,426 59	9,279 94	2,453 43
Net increase, $6,826.51.				
Collections.				
Slide and boom dues	87,789 73	114,870 16		27,080 43
Graving docks	50,614 84	42,876 09	7,738 75	
Rents and sales	33,354 76	37,652 37		4,297 61
	171,759 33	195,398 62	7.738 75	31,378 04
Net decrease, $23,639.29.				

In conclusion I have to acknowledge the uniform courtesy and cheerful assistance accorded me at all times by the officers of the department with whom I have been brought in contact during the year.

I have the honour to be,

Your obedient servant,

EDW. T. SMITH,

Collector of Public Works Revenue.

No. 1.—STATEMENT of Slidage and Boomage from the Ottawa Slides and Works, accrued prior to July 1, 1889, Outstanding March 31, 1912.

By whom due.	Bad and Doubtful Debts.	Chaudiere Boomage in Suspense.	Other Slide and Boom Dues Disputed.	Total Outstanding on Sept. 30, 1902.	Years to which Dues belong.	Remarks.
	$ cts.	$ cts.	$ cts.	$ cts		
John & Wm. McLean	53 14			53 14	1873	Insolvent.
John Rowan	342 50			342 50	1872-1873	"
Lemieux & Charette	21 30			21 30	1873	"
Taillon & Lapierre	148 10			148 10	1873-1874	"
Mosgrove & McHarry	261 42			261 42	1873-1874	"
W. C. Wells	600 90			600 90	1873-1874	"
Dufresne & McGarity	528 80			528 80	1874-1875	"
Walton Smith	171 46			171 46	1874-1875	"
A. H. Baldwin	3,507 92			3,507 92	1871 to 1874	"
Hon. James Skead	9,807 65			9,807 65	1861-63-64-69-75 to 1878	"
Batson & Currier	5,558 70			5,558 70	1875 to 1877	"
A. F. A. Knight	546 30			546 30	1878	"
James Walker	11 25			11 25	1877	"
R. Campbell & Son	1,558 50			1,558 50	1879 to 1881	"
James G. Bryson	73 50			73 50	1886	"
Costello Bros	90 62			90 62	1882	"
N. E. Cormier	428 34			428 34	1888	"
James Yuhill	9 29			9 29	1876	Overcharge.
J. & B. Grier	76 84			76 84	1883	"
R. & W. Conroy	95 42			95 42	1882-1883	" reported in return S—38, for March, 1886.
A. P. White	101 00			101 00	1881	"
B. Caldwell & Son	4 33			4 33	1887	"
J. R. Booth		9,871 93	398 88	10 270 81	1881 to 1888	$398.88 counter claim for damages by the breaking of Coulonge boom.
Perley & Pattee		8,889 85		8,889 85	1881 to 1888	
The Bronson & Weston Lumber Co.		8,180 79		8,180 79	1881 to 1888	
Pierce & Co		462 18		462 18	1888	
G. A. Grier & Co		1,060 59		1,060 59	1886-1887	* Chaudiere boomage. These parties claim that they have maintained these works wholly at their own expense since 1881.
Estate late Levi Young		1,461 20		1,461 20	1881 to 1885	
Wm. Mason		413 85		413 85	1881 to 1888	
Gilmour & Co		406 27		406 27	1884	
John Rochester		258 88		258 88	1881 to 1883	
J. & G. Bryson			252 20	252 20	1886	Counter claim for damages by the breaking of Coulonge works.
	23,997 28	31,006 54	651 08	55,653 90		

EDW. T. SMITH, *Collector of Slide and Boom Dues.*

No. 2.—STATEMENT of Slide and Boom Dues accrued from the Ottawa River Works since July 1, 1889, Outstanding March 31, 1912.

Name.	Year to which Dues belong.	Chaudiere Boomage in suspense.	Ordinary dues	Total.	Remarks.
		$ cts.	$ cts.	$ cts.	
J. R. Booth	1889-90	2,561 69		2,561 69	Chaudiere boomage reported to Council and referred to Treasury Board, should be written off.
Bronson & Weston Lumber Co.	1889-90	2,056 96		2,056 96	
Perley & Pattee	1889-90	1,203 26		1,203 26	
Wm. Mason & Sons	1889-90	167 66		167 66	
Pierce & Co.	1889-90	913 48		913 48	
Alex. Fraser, account Thos. Stephens	1890-91		28 42	28 42	Legal action taken to recover this.
J. R. Booth	1892-93		379 80	379 80	Retained by Mr. Booth in settlement of account due him, which the Auditor General refused to pay, as Mr. Booth appeared to be in arrears in this Statement and No. 1.
Bryson & Fraser	1896		196 71	196 71	Have counter claim for work done on slide to this amount.
J. R. Booth	1903		339 27	339 27	Petewawa slidage disputed.
Hawkesbury Lumber Co	1903		298 10	298 10	" "
Pembroke Lumber Co.	1911		723 63	723 63	Counter claim for building dam.
J. J. McFadden & Co.	1911		224 82	224 82	
Grand totals		6,903 05	2,190 75	9,093 80	

DEPARTMENT OF PUBLIC WORKS
OTTAWA, June 15, 1912.

EDW. T. SMITH,
Collector of Slide and Boom Dues.

No. 3.—STATEMENT of Outstanding Slide Dues, Ottawa District, Bonds for which were sent to Quebec for Collection.

Name.	From 1860.	From 1861.	Total.
	$ cts.	$ cts.	$ cts.
Hon. James Skead	245 00	210 00	455 00
James Mair	.....	696 75	696 75
	245 00	906 75	1,151 75

These amounts were uncollected, as the parties claimed damages for loss caused by the Madawaska boom breaking in 1860.

A decision on their claims was not arrived at till August 2, 1869. On the 5th idem, Messrs. Skead and Mair were notified that the department could not recognize their claim.

To the best of my knowledge, this decision was never communicated to the Collector of Slide Dues; consequently, these accounts remained in abeyance.

Since then, both parties died, and I believe both were insolvent at the time of their death.

EDW. T. SMITH,
Collector of Slide and Boom Dues.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, June 15, 1912.

No. 4.—STATEMENT of the number of Pieces of Square Timber, Saw-logs, &c., that passed through the Government Slides and Works on the Ottawa River and its Tributaries during the fiscal year ended 31st March, 1912.

	Pieces.
Square timber (none)	
Saw-logs	4,072,106
Boom and dimension timber	62,589
Cedars	29,901
Railroad ties	122,189
Fence posts	13,693
Telephone posts	11,802
	4,312,280

Also 68,400 cords of pulp wood.
The revenue accrued on the above was $34,202.88.

EDW. T. SMITH,

Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,
Ottawa, June 15, 1912.

No. 5.—STATEMENT showing the Dues Accrued on the Undermentioned Works on the Ottawa River and its Tributaries during the Fiscal Year ended March 31, 1912.

	Amount.
River and other improvement—	
Main Ottawa	$2,304 45
Cheneaux Boom	4,125 27
River Petewawa	9,983 65
Madawaska	448 09
Coulonge	5,027 69
Dumoine	76 42
Black River	7,502 24
Gatineau	4,735 07
	$34,202 88

EDW. T. SMITH,

Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,
Ottawa, June 15, 1912.

No. 6.—STATEMENT of Slide and Boom Dues from the St. Maurice Slides and Works, outstanding on March 31, 1912.

Name.	Year to which dues belong.	Amount.	Total.	Remarks.
		$ cts.	$ cts.	
George Baptist, Sons & Co....	1878	469 95		
" "	1879	2,110 02		
" "	1880	1,696 18	.. . .	Have counter claims for damages to logs caused by the booms not being stretched early enough in the spring of 1878 to prevent the logs from going over the chutes. The claims were submitted to special commissioner, Mr. McDougall, afterwards judge, who recommended that the claims of the parties should be allowed.
" "	1881	293 69		
" "	1882	165 80		
" "	1884	118 50		
" "	1888	4 28		
			4,859 02	
Ross, Ritchie & Co	1878	3,072 84		
"	1883	2,173 69		
"	1884	28 96		
"	1886	1 62		
"	1887	4 38		
			5,281 48	
Alex. Baptist..... ..	1879	2,116 96		
			2,116 96	
Wm. Ritchie & Co..... ...	1888	779 24		
"	1889	332 11		
			1,111 35	Of this amount $754.20 is claimed to be an overcharge—Insolvent.
Ritchie Bros.....	1886	413 43	....	This amount is composed of overcharges in 1886 and 1887 of $842.76 and overpayment in 1884 of $205.38.
"	1887	634 71		
			1,048 14	
G. B. Hall.....	1890	.....	49 31	Insolvent.
T. E. Normand.....	1890	.....	14 28	Claims that this balance is is an overcharge.
Treffle Biron.....	1891	.....	0 92	Would cost more to collect than it is worth.
			*14,481 49	
The Laurentide Paper Co....	1909	....	3.709 62	
			18,191 11	

*To make this balance agree with the Public Accounts, there should be deducted $7.93 overcredited Alex. Baptist, and $217.17 added thereto , being $190.40 paid July 23, 1884, and $26.77 overcharged in error to Wm. Little, not in any of the collector's returns, which which will give the balance due September 30, 1894, of $14,690.73.

EDW. T. SMITH,

Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,
Ottawa, June 15, 1912.

No. 7. STATEMENT of Slide and Boom Dues accrued from the Newcastle and Trent River Works, outstanding on March 31, 1912.

Name.	Year to which dues belong.	Amounts disputed.	Ordinary dues.	Total.	Remarks.
		$ cts.	$ cts.	$ cts.	
Irwin & Boyd	1881	59 79		59 79	
Thompson & McArthur	1880	52 78		52 78	
Jabez Thurston	1882	12 50		12 50	Insolvent.
McDougall & Ludgate	1879	65 07		65 07	
Bigelow & Trounce	1882 to 1885	216 21		216 21	
R. G. Strickland	1882 '83, '85, '86, '87,	215 08		215 08	
Est. Late Geo. Hilliard	1877 to 1883 and 1886	354 15		354 15	Dead and estate distributed.
T. G. Hazlett	1881, '82, '84 to '89	885 25		885 25	
J. M. Irwin	1882, '83, '85 to '88	698 45		698 45	According to judgment in the Exchequer Court *re* Boyd vs. Smith, these cannot be collected.
D. Ullyott	1881 to 1887	547 68		547 68	
Greene & Ellis	1881 to '83, '85, '88 and '89	157 01		157 01	
A. W. Parkin	1884, '85, '88, '90 and '91	65 92		65 92	
The Dickson Estate	1883	137 50		137 50	
Alfred McDonald	1888	40 80		40 80	
John Parkin	1889	13 00		13 00	
John Dovey	1894, '95, '96		35 70	35 70	Sent to Department of Justice for collection.
Peterborough Lumber Co	1911		163 74	163 74	Since Paid.
Estate A. McDonald	1911		603 39	603 39	" "
Cavendish Lumber Co	1911		624 73	624 73	" "
		3,521 19	1,427 56	4,948 75	

EDW. T. SMITH,

Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,
Ottawa, June 15, 1912.

THE DRY DOCK AT ESQUIMALT.

No. 8.—STATEMENT of Dues and other charges collected during the Year ended March 31, 1912.

Name of Vessel Docked.	Tonnage.	Period of Dockage. From	Period of Dockage. To	Dockage Charges.	Other Charges.	Total.
		1911.	1911.	$	$	$
D.G.S. *Lillooet*	591	April 6	April 9	400 00	6 00	406 00
D.G.S. *Quadra*	573	May 3	May 5	350 00	60	350 60
S.S. *Princess Chartotte*	3,844	May 9	May 11	392 50	32 40	424 90
S.S. *Georgia*	2,871	May 31	June 1	200 00	11 40	211 40
S.S. *Strathearn*	4,419	June 3	June 4	420 95	.....	420 95
S.S. *Ethelnolf*	4,317	June 24	June 26	527 00	1 20	528 20
S.S. *Prince Rupert*	3 379	June 27	June 28	368 95	1 20	370 15
S.S. *Coulsdon*	4,292	June 29	July 5	1,030 00	.....	1,030 00
Dredge *Fruhling*	745	July 19	Aug. 10	1,550 00	16 80	1,566 80
S.S. *Strathgarry*	4,398	Aug. 11	Aug. 12	419 90	2 40	422 30
S.S. *Santa Rita*	5,273	Aug. 28	Sept. 6	1,568 00	164 40	1,732 40
S.S. *Prince Rupert*	3,379	Sept. 10	Sept. 10	200 00	11 40	211 40
H.M.S. *Shearwater*	980					
H.M.S. *Algerine*	1,100	Oct. 4	Oct. 18	687 92	.....	687 92
H.M.C.S. *Rainbow*	3,600	Oct. 19	Nov. 16	2,976 00	36,00	3,012 00
S.S. *Lonsdale*	3,171	Dec. 18	Dec. 22	712 00	5 40	717 40
		1912.	1912.			
S.S. *Prince George*	3,372	Jan. 19	Jan. 21	368 00	1 80	370 40
S.S. *Princess Charlotte*	3,844	Jan. 23	Jan. 26	634 00	29 40	663 40
D.G.S. *Newington*	193	Feb. 1	Feb. 4	250 00	.....	250 00
S.S. *Restorer*	.....	Entrance Fee.	.....	200 00	.....	200 00
S.S. *Strathalbyn*	5,830	Feb. 4	Feb. 25	3,226 00	54 60	3,280 60
	60,171			16,481 82	375 00	16,856 82

EDW. T. SMITH,
Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS.
Ottawa, 15th June, 1912.

THE DRY DOCK AT LEVIS.

No. 9.—STATEMENT of Dues and other charges collected during the year ended March 31, 1912.

Name of Vessel Docked.	Tonnage.	Period of Dockage. From.	Period of Dockage. To	Dockage. Charges.	Other Charges.	Total.
		1911.	1911.	$ cts.	$ cts.	$ cts.
Str. *Tadousac*		Wintering		800 00		800 00
S.S. *Natashquan*	991	May 2	May 11	696 40		696 40
		1910.				
Caisson	1,234	Oct. 20	" 28	4,698 39	104 40	4,802 79
S.S. *Colomb*		Entry Fee		200 00		200 00
S.S. *Plessis*		"		200 00		200 00
		1911.	1911.			
S.S. *Manchester Spinner*	4,227	June 7	June 22	2,283 56	22 50	2,306 06
S.S. *Cartier*	632	May 17	May 20	200 00		200 00
S,S. *Champlain*	522	" 31	June 18	550 00		550 00
S.S. *Montcalm*		" 31	" 6			
		June 24	July 18	2,268 76	27 00	2,295 76
Dge. *International*		Wintering		600 00	139 12	739 12
Dge. *Beaujeu*	2,046	May 11	May 17	895 52		895 52
S.S. *Galveston*	1,271	" 20	" 27	635 98		635 98
Str. *Colomb*	559	Aug. 1	Aug. 5	50 00		50 00
Tug *Lisgar*					2 84	2 84
Dge. *Ottawa*					5 00	5 00
S.S. *Earl Grey*	2,357	Aug. 10	Sept. 28	5,159 86	6 25	5,166 11
Str. *Rapids King*		Wintering		200 00		200 00
Str. *Rapids Queen*		"		200 00		200 00
Str. *Plessis*	550	Oct. 5	Oct. 9	50 00		50 00
Str. *Lake Champlain*	7,392			993 52	18 00	1,011 52
Str. *Polana*					2 00	2 00
S.S. *Druid*	503			150 00	50 00	200 00
S.S. *Lady Grey*	733			1,050 00	50 00	1,100 00
S.S. *Lady Grey*	733	May 31	June 6			
		June 24	July 18	1,448 92		1,448 92
	23,750			23,330 91	427 11	23,758 02

EDW. T. SMITH,
Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS.
Ottawa, 15th June, 1912.

No. 10.—Hydraulic and Other Rents, &c., Lessees'

Balance due April 1, 1911.	Rents accrued up to March 31, 1912.	Total.	Location.	Location.
$ cts.	$ cts.	$ cts.		
	200 00	200 00	Ottawa River	Royal Trust Co
	100 00	100 00	"	"
	300 00	300 00	"	"
	100 00	100 00	"	"
	100 00	100 00	"	"
	300 00	300 00	"	"
	400 00	400 00	"	"
	300 00	300 00	"	"
	100 00	100 00	"	Ottawa Electric Railway Co
	600 00	600 00	"	The Ottawa Power Co
200 00	200 00	400 00	"	Royal Trust Co., (in abeyance)
	208 00	208 00	"	J. R. Booth
	10 00	10 00	"	Royal Trust Co
	100 00	100 00	"	"
	96 00	96 00	"	"
128 00	8 00	136 00	"	Mary Conroy
570 84		570 84	"	Royal Trust Co
	25 00	25 00	"	"
200 00		200 00	"	Merchants Bank of Canada
96 00		96 00	"	" "
	1 00	1 00	"	Ottawa Electric Co
380 00		380 00	"	John Rankin
	150 00	150 00	"	J. R. Booth
	5 00	5 00	"	Ottawa Electric Co
	50 00	50 00	"	Royal Trust Co
	1 00	1 00	"	Alfred Desjardin
	100 00	100 00	"	Royal Trust Co
	10 00	10 00	"	Ottawa Electric Co
	1 00	1 00	St. Lawrence	Quebec Harbour Commissioners
275 00		275 00	"	Richelieu & Ontario Navigation Co
	1 00	1 00	Quebec	Corporation of Quebec
	1 00	1 00	"	Narcisse Blais
	1 00	1 00	Rondeau Harbour	School Trustees
	1 00	1 00	Collingwood	Great Northern Transit Co
7 00	1 00	8 00	Ottawa	E. G Laverdure
	1 00	1 00	Three Rivers	Corporation of Three Rivers
	100 00	100 00	"	Uuion Bag and Paper Co
165 00		165 00	British Columbia	A. Peel
90 00		90 00	"	Jonathan Maury
	25 00	25 00	"	Roderick Finlayson
25 00	25 00	50 00	"	Joseph Spratt
	12 00	12 00	"	D. W. Gordon
	5 00	5 00	"	Geo. A. Huff
70 00		70 00	R. du Lievre	Dominion Phosphate Co
1 00		1 00	Charlottetown	Rt. Rev. Bishop McIntyre
	16 00	16 00	Antigonish, N.S	R. C. Archibald
	1 00	1 00	Owen Sound	G. T. Railway
240 00		340 00	Windsor	Archie McNee
10 00	5 00	15 00	Bayfield, N.S	Chas. L. Gass
2 00	1 00	3 00	"	"
5 00	5 00	10 00	Village of Brook	Wm. Pedwell
	1 00	1 00	Walkerton, Ont.	D. Robertson and J. Rowland
	2 00	2 00	British Columbia	Canadian Pacific Ry. Co.
	5 00	5 00	Co. Grey, Ont	Jacob Duke Spiers, estate of
	1 00	1 00	Levis, Que	Cyril Robitille
2,464 84	3,675 00	6,464 84		

DEPARTMENT OF PUBLIC WORKS.
Ottawa, 15th June, 1912.

SESSIONAL PAPER No. 19

Accounts for the year ended March 31, 1912.

Description of Property.	Date to which account is made up.	Paid during the Year.	Balance due on March 31, 1912.	Total.
		$ cts.	$ cts.	$ cts.
Lot, B. and C., Chaudiere St., service ground	Dec. 31, 1911	200 00		200 00
Lot, D.	"	100 00		100 00
Lots, H. I. J., grist mill, North Head St.	"	300 00		300 00
Lot, K., fanning mill, South Head St.	"	100 00		100 00
Lot, L, service ground.	"	100 00		100 00
Lots, Q. R. T., service ground, North Middle St	"	300 00		300 00
Lots, M. N. O. and P., service ground, (no water)	"	400 00		400 00
Lots, E. F. and G., South Head St.	"	300 00		300 00
Lot, S., service ground	"	50 00	50 00	100 00
Lots, U. V. W. X. Y. and Z., service ground.	"	600 00		600 00
Two strips of land.	" 1912		400 00	400 00
Portion Government Reserve, head of slide	Sept. 20, 1912	208 00		208 00
Bridge over slide	June 30, 1912	10 00		10 00
Strip of land, Amelia Island	Jan. 1, 1913	100 00		100 00
Reserve head of Chaudiere Island	"	96 00		96 00
Small Island in Deschesne Rapids	"		136 00	136 00
Portion lot 39, Con. A., Nepean	Jan. 31, 1884		570 84	570 84
Excavated channel, slide and two dams, Little Chaudiere	Mar. 1, 1912	25 00		25 00
Water lot, opposite lot 30, Con. A., Nepean	Dec. 1, 1891		200 00	200 00
Three small islands, Ottawa River,	April 30, 1891		96 00	96 00
Covering over portion of Ottawa slides	Nov. 9, 1912		1 00	1 00
East portion, Hawley Island	June 20, 1891		380 00	380 00
Piece of land, south west end Union Bridge	May 12, 1911	150 00		150 00
" " Victoria Island	Mar. 11, 1913		5 00	5 00
Land, south side Middle St., Victoria Island	Aug. 31, 1912	50 00		50 00
Land, Longue Pointe Rouge, Templeton Co., Ottawa	Oct. 4, 1912		1 00	1 00
South west of lot No. 1, Amelia Island	" 9, 1911	100 00		100 00
Lot, Pa., South Head St	Jan. 10, 1913	10 00		10 00
Lot near Custom House, Quebec	Sept. 1, 1912	1 00		1 00
Roadway from pier at Coteau Landing	July 1, 1909		275 00	275 00
Old Provincial Government, building and grounds	June 24, 1912	1 00		1 00
Privilege to erect bridge on St. Charles River.	Feb. 6, 1913	1 00		1 00
Log building, former Custom House, Shrewsbury, Ont	Sept. 11, 1911	1 00		1 00
Use of breakwater to store coal	Jan. 1, 1913	1 00		1 00
S. E., half, lot 8, Ottawa	Dec. 18, 1912		8 00	8 00
Land, Ile St. Christophe, River St. Maurice	" 1, 1912	1 00		1 00
" " "	June 30, 1911	100 00		100 00
Portion of Assay Office, New Westminster.	" 30, 1889		165 00	165 00
" " "	" 30, 1889		90 00	90 00
Permit for two bulkheads, Victoria Harbour.	" 1, 1912	25 00		25 00
Privilege to build wharf on lots, A. and C	" 1, 1912	25 00	25 00	50 00
Beach lots, A.C.E.F., front of 7, 8, 9, Nanaimo Harbour.	Aug. 12, 1912	12 00		12 00
Permit to build wharf, lot, A, block 2, Sumas River.	" 12, 1912	5 00		5 00
Permit for landing at Little Rapids, River du Lievre.,	April 30, 1898		70 00	70 00
Leave to drain to main service, public building	May 16, 1902		1 00	1 00
Tract of land and water lot, McNair's Cove	Dec. 31, 1912	16 00		16 00
Land, west side of Sydenham River	" 31, 1912		1 00	1 00
Lot on Ouellette St., Windsor, Ont.	April 30, 1900		240 00	240 00
Water lot.	Dec. 8, 1912		15 00	15 00
"	June 9, 1912	3 00		3 00
"	Mar. 31, 1912	10 00		10 00
Right of way over strip of land	April 27, 1912	1 00		1 00
Part Custom House, lot, New Westminster.	" 14, 1913	2 00		2 00
Water lot.	" 8, 1912	5 00		5 00
Ground rent	" 4, 1912	1 00		1 00
		3,410 00	2,729 84	6,139 84

EDW. T. SMITH,
Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS.
Ottawa, 15th June, 1912.

No. 10.—Hydraulic and Other Rents, &c., Lessees'

Balance due April 1, 1911.	Accrued during the year ended March 31, 1912.	Total.	Occupant.
$ c.	$ c.	$ c.	
2,600 62	. . . . .	2,600 62	R. Murdy . . . . .
8,000 00	. . . . .	8,000 00	Corporation Galt and Dundas. . . . .
. . . . .	1 00	1 00	North American Telegraph . . . . .
. . . . .	25 00	25 00	Grand Trunk Railway Co. . . . .
43 75	. . . . .	43 75	
10,644 37	26 00	10,670 37	

Department of Public Works.
Ottawa, 15th June, 1912.

Accounts for the year ended March 31, 1912.

Description of Property.	Paid during the year ended March 31, 1912.	Balance due on March 31, 1912.	Total.
	$ c.	$ c.	$ c.
Dunville Bridge		2,600 62	2,600 62
Dundas and Waterloo Road		8,000 00	8,000 00
Gov't Tel. line between Bath and Amherst	1 00		1 00
Wiarton Docks	25 00		25 00
Part of Building, Portland, N.B		43 75	43 75
	26 00	10,644 37	10,670 37

EDW. T. SMITH,
Collector of Public Works Revenue.

No. 12.—HYDRAULIC and other Rents, &c.—

Balances due on April, 1908.	Totals.	Number.	Location.	Name of Proprietors.
$ cts.	$ cts.			LAND SALES—PRINCIPAL ACCOUNT.
12,092 83	12,092 83	1	Hamilton and Port Dover Road	Choat & Kern
433 34	433 34	2	Bonner's property, Quebec	Timothy Sullivan, now M. Murphy
333 34	333 34	3		John Bailey, now Alex. Powell
300 00	300 00	4		Abraham Thompson
147 80	147 80	5		John Boomer
248 40	248 40	6		John Garbatz, now J. C. Nolan
154 80	154 80	7		N. H. Bowen.
600 00	600 00	8		Estate Robert Reid
333 33	333 33	9		John Chevalier
533 33	533 33	10		Daniel Holden
333 33	333 33	11		George Creeley
63 00	63 00	12		Thomas McAdam
15,573 50	15,573 50			LAND SALES—INTEREST ACCOUNT.
6,298 25	6,298 25	1	Hamilton and Port Dover Road	Choat & Kern (matured)
558 00	558 00	2	Bonner's property, Quebec	Timothy Sullivan, now M. Murphy
120 00	120 00	3		John Bailey, now Alex. Powell
306 00	306 00	4		Abraham Thompson
155 22	155 22	5		John Boomer
275 82	275 82	6		John Garbatz, now J. C. Nolan
208 95	208 95	7		N. H. Bowen.
828 00	828 00	8		Estate Robert Reid
190 00	190 00	9		John Chevalier
298 68	298 68	10		Daniel Holden
35 91	35 91	11		George Creeley
100 00	100 00	12		Thomas McAdam
100 00	100 00	13		Joseph Brook, tenant
9,474 83	9.474 83			

DEPARTMENT OF PUBLIC WORKS,

OTTAWA, 15th June, 1912.

—LESSEES' Accounts, 1911–1912.

Description of Property.	Number.	Date to which the account is made up.	Balances transferred to Public Works Department by O.C. of April 27, 1909.	Totals.
			$ cts.	$ cts.
Hamilton and Port Dover and Caledonia Bridge	1		12,092 83	12,092 83
Lot No. 1, Wolfe Street	2		433 34	433 34
" 9 "	3		333 34	333 34
" 49 "	4		300 00	300 00
" 73 and 74, Tower Street.	5		147 80	147 80
" 64 Wolfe Street, and 211 and 252 Ware Street.	6		248 40	248 40
" 67 and 68, Monument Street.	7		154 80	154 80
" 22 and 23, Wolfe Street	8		600 00	600 00
" 32, Wolfe Street	9		333 33	333 33
" 65 and 66, Wolfe Street	10		533 33	533 33
" 31, Wolfe Street	11		333 33	333 33
" 135, Church Street.	12		63 00	63 00
			15,573 50	15,573 50
	1	June 30, 1874	6,298 25	6,298 25
Lot No 1, Wolfe Street	2	May 1, 1889	558 00	558 00
" 9 "	3	"	120 00	120 00
" 49 "	4	"	306 00	306 00
" 73 and 74, Tower Street.	5	"	155 22	155 22
" 64, Wolfe Street, and 211 aud 252 Ware Street	6	"	275 82	275 82
" 67 and 68, Monument Street	7	"	208 95	208 95
" 22 and 23, Wolfe Street	8	"	828 00	828 00
" 32 Wolfe Street	9	Nov. 1, 1863	190 00	190 00
" 65 and 66, Wolfe Street	10	"	298 68	298 68
" 31, Wolfe Street	11	"	35 91	35 91
" 135, Church Street.	12	"	100 00	100 00
Monument Hotel	13	"	100 00	100 00
			9,474 83	9,474 83

EDW. T. SMITH,

Collector of Public Works Revenue.

PART VII

MISCELLANEOUS

CONTRACTS LET BY THIS DEPARTMENT.

PROPERTY PURCHASED OR SOLD.

PROPERTY, LEASED TO OR BY THE DEPARTMENT.

DRY DOCKS OF THE WORLD.

DIRECTOR'S REPORT, NATIONAL ART GALLERY.

NAMES OF CHIEF OFFICERS OF THE DEPARTMENT.

NAMES OF OFFICIALS EMPLOYED ON SLIDES AND BOOMS.

NAMES OF PERSONS EMPLOYED ON GRAVING DOCKS.

NAMES OF ENGINEERS, FIREMEN AND CARETAKERS OF PUBLIC BUILDINGS.

TABLES OF EXPENDITURE AND REVENUE.

FOR THE

FISCAL YEAR ENDED MARCH 31, 1912

DEPARTMENT OF PUBLIC WORKS OF CANADA,

LAW CLERK'S OFFICE,

OTTAWA, August 1, 1912.

SIR,—I have the honour to transmit the following statements concerning the transactions of the Department during the last fiscal year, with respect to contracts and property, and which are required for insertion in the annual report, 1911-12, viz.:—

No. 1. Statement of contracts let by this Department during the fiscal year ended March 31, past.

No. 2. Statement of property purchased and sold by the Department during the same period.

No. 3. Statement of property leased to and by the said Department during the same period.

No. 4. A list of some of the Public Acts of the Parliament of Canada, passed at the last session, and Orders in Council having reference to the Department.

I have the honour to be, sir,

Your obedient servant,

J. A. CHASSE,

Law Clerk.

R. C. DESROCHERS, Esq.,
Secretary of the Department of Public Works,
Ottawa, Ont.

STATEMENT

SHOWING

1ST.—CONTRACTS LET BY THE DEPARTMENT OF PUBLIC WORKS OF CANADA, FROM APRIL 1, 1911, TO MARCH 31, 1912.

2ND.—PROPERTY PURCHASED OR SOLD BY THE DEPARTMENT OF PUBLIC WORKS DURING THE FISCAL YEAR ENDED MARCH 31, 1912.

3RD.—PROPERTY LEASED TO AND BY THE DEPARTMENT OF PUBLIC WORKS DURING THE FISCAL YEAR ENDED MARCH 31, 1912.

Works.			Names of Contractors.	Date of Contract.	Amount.
					$ cts.
Public Buildings.					
Nova Scotia.					
Amherst	Post Office	*Supply of coal	J. H. Hewson	Aug. 27, 1911	201 23
Annapolis	"	"	A. M. King & Son	Sept. 15, 1911	216 53
Antigonish	"	"	Acadia Coal Company	" 20, 1911	187 32
Arichat	"	"	C. P. Ferris	Aug. 23, 1911	217 50
Baddeck	"	"	McKay, MacAskill & Company	Sept. 18, 1911	180 00
Bridgewater	"	"	Intercolonial Coal Mining Co., Limited	" 20, 1911	125 61
Canso	"	"	A. N. Whitman & Son	Oct. 4, 1911	359 25
Dartmouth	"	"	S. Cunard & Company	Sept. 23, 1911	93 75
Digby	"	"	W. E. Van Blarcom	" 23, 1911	262 00
Guysborough	"	"	Angus MacDonald	" 1, 1911	245 00
Halifax	"	Interior fittings	The Berlin Interior Hardwood Co., Ltd	July 17, 1911	12,663 00
"	Detention Hospital	Supply of coal	Acadia Coal Company	Sept. 20, 1911	209 57
"	Custom House	"	S. Cunard & Company	" 23, 1911	
"	Post Office	"	" "	" 23, 1911	
"	Immigration Building	"	" "	" 23, 1911	92 40
"	" "	"	Acadia Coal Company	" 23, 1911	80 73
"	" "	"	Halifax Coal Company	" 23, 1911	39 85
"	" "	"	Hugh D. Mackenzie & Company	" 23, 1911	
Hillsborough	Public Building	Construction of	O. J. Dunham & P. N. Leblanc	Aug. 25, 1911	20,225 00
Inverness	Post Office	Supply of coal	Inverness R'y and Coal Company	" 23, 1911	375 65
Kentville	Public Building	"	Minudie Coal Co., Ltd	Sept. 9, 1911	163 80
"	"	"	P. E. Lloyd	" 12, 1911	70 00
Liverpool	Post Office	"	Intercolonial Coal Mining Co., Ltd	" 20, 1911	176 25
Lunenburg	"	"	John B. Young	" 23, 1911	233 95
"	Public Building	Interior fittings	Bœhmer Bros	Dec. 21, 1911	1,040 00
New Glasgow	"	"	Acadia Coal Company	Sept. 20, 1911	302 36
North Sydney	"	"	Colonial Coal Company, Limited	" 20, 1911	229 04
"	Immigration Office	"	" "	" 20, 1911	201 88
Parrsboro	Public Building	Construction of	Falconer & McDonald	Oct. 19, 1911	26,900 00
Pictou	Post Office	Supply of coal	Intercolonial Coal Mining Co., Ltd	Sept. 20, 1911	
"	Custom House	"	" " "	" 20, 1911	414 75
Shelburne	Post Office	"	Joseph McGill	" 13, 1911	229 75
Springhill	"	"	Dominion Coal Company, Ltd	" 21, 1911	229 60
Sydney	"	"	" "	Aug. 22, 1911	369 91

* Supply of coal is based on schedule of price per ton.

"	Construction of counter in Custom Office		Chappell Brothers & Company, Ltd	April 5, 1911	400 00
Sydney Mines	Post Office	Supply of coal	Colonial Coal Company, Ltd	Sept. 20, 1911	195 37
Truro	"	"	Frank Wilson	" 11, 1911	264 00
Westville	"	"	Intercolonial Coal Mining Company, Ltd	" 20, 1911	157 75
Windsor	"	"	Acadia Coal Co	" 20, 1911	251 65
Wolfville	Public Building	Construction of	Arthur Hood	Aug. 28, 1911	29,900 00
Yarmouth	Post Office	Supply of coal	Killam Brothers	Sept. 22, 1911	366 50
	Prince Edward Island.				
Charlottetown	Dominion Building	Supply of coal	A. Pickard & Co	Sept. 20, 1911	
"	Old Bank	"	"	" 20, 1911	1,009 67
Georgetown	Post Office	"	Poole & Thompson	Aug. 21, 1911	170 66
Montague	"	"	"	" 21, 1911	173 88
Souris	"	"	A. Pickard & Co.	Sept. 20, 1911	171 55
"	"	"	C. Lyons & Co	" 15, 1911	111 88
Summerside	"	"	R. T. Holman & Co	Aug. 22, 1911	362 56
"	"	"	Jos. Read & Co., Limited	" 21, 1911	67 38
Tignish	Public Building	Construction of	J. M. Clark	July 18, 1911	19,000 00
	New Brunswick.				
Bathurst	Post Office	Supply of coal	Stothart Mercantile Co., Ltd	Sept. 18, 1911	235 90
Campbellton	"	"	R. K. Shives	Aug. 30, 1911	175 00
Chatham	"	"	Stothart Mercantile Co., Ltd	Sept. 18, 1911	243 47
Dalhousie	"	"	Chas. Powell	" 17, 1911	247 72
Fairville	Public Building	Construction of	R. A. Corbett	May 18, 1911	17,400 00
*Supply of coal is based on schedule of price per ton.					
Fredericton	Post Office	Supply of Coal	S. L. Morrison	Sept. 23, 1911	425 01
Marysville	"	"	"	" 23, 1911	175 44
Moncton	"	"	Intercolonial Coal Mining Co. Ltd	" 20, 1911	315 16
"	Alteration and additions to Post Office	Fittings	P. N. Leblanc	Dec. 16, 1911	1,339 00
Newcastle	Post Office	Supply of Coal	Stothart Mercantile Co. Ltd	Sept. 18, 1911	359 19
Richibucto	"	"	W. E. Forbes	" 6, 1911	325 94
St. John	"	"	R. P. & W. F. Starr Ltd	" 23, 1911	772 49
"	Savings Bank	"	" "	" 23, 1911	293 75
"	Custom House	"	" "	" 23, 1911	1,743 25
"	Detention Building	"	" "	" 23, 1911	
"	Immigration Building	"	" "	" 23, 1911	1,162 64
St. John West	Post Office	"	Estate of C. E. Colwell	" 19, 1911	110 45
" "	Detention Building	"	" "	" 19, 1911	27 40
St. Stephen	Post Office	"	W. C. Purves	Aug. 24, 1911	177 50
Sussex	"	"	The Sussex Mercantile Co. Ltd	Sept. 15, 1911	337 50
Woodstock	"	"	H. E. Burtt	" 1, 1911	280 00

No. 1.—Contract let by the Department of Public Works of Canada, from April 1, 1911, to March 31, 1912.—*Continued.*

Works.			Names of Contractors.	Date of Contract.	Amount.
					$ cts.
PUBLIC BUILDINGS.					
Quebec.					
Acton Vale	Post Office	Supply of Coal	S. E. Desmarais & Co	Sept. 23, 1911	191 95
Aylmer	"	"	Aylmer Coal & Supply Co	" 23, 1911	195 78
Berthierville	"	"	F. O. Lamarche	Aug. 28, 1911	120 00
Buckingham	Public Building	"	The Traders Co	" 22, 1911	185 99
Chicoutimi	"	"	Côté, Boivin & Co	" 23, 1911	360 00
Coaticook	Post Office	"	B. J. Smith & Son	Sept. 15, 1911	280 83
Cookshire	"	"	E. J. Planche & Co	Aug. 25, 1911	238 50
Drummondville	"	"	Ephrem Archambault	" 21, 1911	141 31
Dundee	Custom House	"	A. S. Matthews	" 21, 1911	81 00
Farnham	Post Office	"	Arthur Giroux	" 29, 1911	79 20
Fraserville	"	"	E. A. Doucet	Sept. 23, 1911	341 70
Granby	"	"	P. Phoenix	" 12, 1911	276 25
Hochelaga	"	"	Joseph Elie	" 23, 1911	208 73
Hull	"	"	Hull Coal Co	" 26, 1911	286 00
Iberville	"	"	John Donaghy	" 23, 1911	72 00
Joliette	"	"	Sinaï Bourgeois	" 23, 1911	163 49
Knowlton	"	"	F. A. Knowlton	" 12, 1911	198 72
Lachine	"	"	Martin & Cie	Aug. 23, 1911	116 38
Lachute	"	"	R. Creswell	" 23, 1911	202 92
Laprairie	"	"	Emery Brossard	Sept. 27, 1911	136 98
L'Assomption	"	"	La Cie Bédard Limitée	" 20, 1911	134 00
Lévis	Armoury, Construction of		The Ideal Construction Co	June 19, 1911	68,518 00
Longueuil	Post Office	Supply of Coal	C. F. Dénicourt	Sept. 11, 1911	144 15
Magog	"	"	F. B. Mullin	" 20, 1911	303 24
Marieville	Removal of local Public Building		Lachance Bros	June 16, 1911	500 00
Montmagny	Post Office	Supply of Coal	E. Boulanger & Fils	Sept. 18, 1911	152 00
Montreal	Postal Station "C"	Construction of	J. B. Séguin & J. M. Guindon	May 20, 1911	94,000 00
"	Central Post Office	Alterations to	Jos. Bourque	" 27, 1911	252,500 00
"	Postal Station "B"	Supply of Coal	Andrew Baile	Sept. 25, 1911	287 07
"	Revenue Building	"	"	" 25, 1911	319 95
"	Immigration Building	"	"	" 25, 1911	298 27
"	Express Office	"	"	" 25, 1911	702 69
"	Examining Warehouse	"	Joseph Elie	" 23, 1911	742 25

"	Custom House	"	L. Cohen & Sons	" 28, 1911	1,124 99
"	Postal Station "C"	"	"	" 28, 1911	253 75
"	Postal Station "B"	"	"	" 28, 1911	
"	Immigration Building	"	"	" 28, 1911	108 75
"	General Post Office	Fittings	P. E. Bourassa & Son	April 1, 1911	2,583 00
Nicolet	Post Office	Supply of coal	Julien Courteau	Sept. 23, 1911	188 84
Pierreville	"	"	Laperrière & Fils	" 18, 1911	90 00
Plessisville	"	"	La Fonderie de Plessisville	" 23, 1911	180 00
Quebec	Cullers' Office	"	Canadian Import Company	" 25, 1911	
"	Marine Agency	"	Canadian Import Company	" 25, 1911	242 13
"	Examining Warehouse	"	Canadian Import Company	" 25, 1911	805 18
"	Immigration Office	"	Canadian Import Company	" 25, 1911	798 82
"	"	"	Canadian Import Company	" 25, 1911	276 94
"	Post Office	"	Canadian Import Company	" 25, 1911	842 44
"	Governor General's Quarters	"	Canadian Import Company	" 25, 1911	616 00
" (St. Roche)	Post Office	"	Canadian Import Company	" 25, 1911	281 34
" Custom House	Electric Passenger Elevator		Otis Fensom Elevator Company	May 31, 1911	4,450 00
"	Princess Louise Embankment	Immigration shed	C. E. Deakin	Dec. 15, 1911	348,000 00
Richmond	Post Office	Supply of coal	S. E. Desmarais & Company	Sept. 23, 1911	236 04
Rimouski	"	"	H. G. Lepage	" 23, 1911	181 41
Rock Island	Public Building	Construction of	N. A. Beach	Aug 12, 1911	17,750 00
Shawinigan Falls	"	"	A Durand	" 4, 1911	32,860 00
Sherbrooke	Post Office	Supply of coal	Cie Coderre & Fils	" 28, 1911	530 92
"	Public Building	Electric light, wiring &c.	J. A. Choquette & Company	Dec. 19, 1911	950 00
Sorel	Post Office	Supply of coal	Alfred Lavallée	Sept. 25, 1911	530 00
St. Hyacinthe	"	"	Demers & Cooney	" 25, 1911	225 00
"	Inland Revenue	"	Demers & Cooney	" 25, 1911	151 88
St. Jerome	Post Office	"	S. G. Laviolette	" 15, 1911	239 64
St. Johns	Old Post Office	"	John Donaghy	" 23, 1911	109 21
"	New "	"	James O'Cain	" 13, 1911	206 14
St. Lambert	Post Office	Construction of	Eugene Patenaude	" 22, 1911	19,800 00
St. Louis du Mile End	"	Supply of coal	George Hall Coal Co. of Canada	" 23, 1911	112 50
St. Romuald	"	"	J. T. Fournier	" 23, 1911	163 97
Terrebonne	"	"	Calixte Gauvreau	Oct. 9, 1911	95 25
Thetford Mines	"	"	J. L. Demers	Sept. 8, 1911	369 43
Three Rivers	"	"	Zephirin Marchand (Fils)	Aug. 26, 1911	
Valleyfield	"	"	Besner & Chasle	" 21, 1911	
Vercheres	Erection of Monument "Madeleine de Vercheres"		Philippe Hébert	Nov. 10, 1911	25,000 00
Victoriaville	Post Office Ontario	Supply of coal	Octave Gaudet	Oct. 9, 1911	165 96
	Ontario.				
Alexandria	"	"	Angus McDonald & Son	Sept. 20, 1911	192 33
Almonte	"	"	Taylor Bros.	" 15, 1911	228 82
Amherstburg	"	"	Falls Bros	" 22, 1911	176 80
Arnprior	"	s	R. S. Drysdale	" 22, 1911	211 49
Athens	Public Building	Construction of	John Dillon	Jan. 29, 1912	13,800 00
Barrie	Post Office	Supply of coal	Mickle Dyment & Son	Sept. 14, 1911	236 25
Belleville	"	"	The F. S. Anderson Company	" 26, 1911	547 95
Bowmanville	"	"	McClelland & Co., Ltd	" 20, 1911	142 50

No. 1.—Contracts let by the Department of Public Works of Canada from April 1, 1911, to March 31, 1912—*Continued.*

Works.			Names of Contractors.	Date of Contract.	Amount.
					$ cts.
PUBLIC BUILDINGS—*Continued.*					
Ontario—Continued.					
Brampton	Post Office	Supply of coal	Daniel Pretley	Sept. 15, 1911	
"	"	"	J. Pickering	" 7, 1911	
Brantford	"	"	Wilson Coal Company	" 25, 1911	554 04
Bridgeburg	"	"	Mrs. Isaac White	Oct. 9, 1911	156 25
Brockville	"	"	The Central Canada Coal Co., Ltd	Sept. 11, 1911	378 00
Carleton Place	"	"	Taylor Bros., Ltd	" 26, 1911	140 00
Chatham	"	"	A. R. Crow	" 20, 1911	221 15
Clinton	"	"	Arthur Forbes	" 5, 1911	130 96
Cobourg	"	"	George Plunkett	" 23, 1911	231 44
Cornwall	"	"	A. F. Mulhern & Co	" 22, 1911	337 50
Deseronto	"	"	The Rathbun Company	Aug. 22, 1911	280 00
Dresden	Public Building	Construction of	W. F. Clarke	April 12, 1911	13,000 00
Dundas	Post Office	Supply of coal	Jas. A. Sturrock	Sept. 13, 1911	45 50
"	Public Building	Construction of	Nagle & Mills	" 18, 1911	31,200 00
Elora	Post Office	Supply of coal	C. Fischer	Oct. 17, 1911	
Essex	Public Building	Construction of	Geo. A. Proctor	June 26, 1911	18,183 00
Fort William	Post Office	Supply of coal	James Murphy	Aug. 24, 1911	581 25
Galt	"	"	J. D. Burns	Sept. 22, 1911	289 35
Gananoque	"	"	Taylor & Green Coal & Lumber Company	" 2, 1911	
"	Custom House	"	" " "	" 2, 1911	171 70
Glencoe	Post Office	"	Huston & Company	" 21, 1911	130 05
Goderich	"	"	F. B. Holmes	" 25, 1911	275 01
"	"	Fittings	J. T. Schell Company	Jan. 16, 1912	1,009 00
Guelph	"	Supply of coal	M. F. Cray.,	Sept. 25, 1911	393 23
Haileybury	Water Supply Plant	Alterations to	Corporation of Town of Haileybury	July 20, 1911	3,710 00
Hamilton	Public Building	Heating apparatus	Drake Avery Co. Ltd	" 7, 1911	2,590 00
"	Post Office	Supply of coal	The Connell Anthracite Mining Co	Sept. 23, 1911	1,039 50
"	Examining Warehouse	"	" "	" 23, 1911	
"	Weights & Measures and Gas Inspectors Office	"	" "	" 23, 1911	
Hawkesbury	Post Office	"	F. X. Berthiaume	Oct. 6, 1911	175 28
Ingersoll	"	"	Scott & Daniels	Sept. 22, 1911	234 50
Kenora	"	"	Windatt & Co.	" 21, 1911	406 88
Kincardine	"	"	John Adams	" 22, 1911	241 29
Kingston	"	Alterations to	J. McKelvey & S. Birch	" 15, 1911	49,100 00
"	Custom House	Supply of coal	P. Walsh	" 25, 1911	241 50
"	Post Office	"	"	" 25, 1911	345 00
"	Inland Revenue	"	"	" 25, 1911	365 70

"	Royal Military College	Dormitory	Michael Sullivan	Mar. 22, 1912	98,444 00
Lindsay	Post Office	Supply of coal	Jos. Maunder & Son	Sept. 30, 1911	110 58
"	"	"	McLennan & Company	" 25, 1911	110 58
Listowell	Public Building	Construction of	M. J. Whelan & Ed. Blakeney	April 5, 1911	28,180 50
London	Custom House	Supply of coal	The Connell Anthracite Mining Company	Sept. 23, 1911	677 91
"	Post Office	"	" " "	" 23, 1911	613 11
Markham	"	"	Robt. Welsh	Oct. 7, 1911	106 82
Napanee	"	"	P. Gleeson	Sept. 25, 1911	59 75
"	"	"	F. E. Van Luven	" 19, 1911	59 75
"	"	"	J. R. Dafoe	" 14, 1911	59 75
"	"	"	Chas. Stevens	" 22, 1911	59 75
Niagara Falls	"	"	J. E. Hutchings	" 25, 1911	286 24
"	"	Fittings	J. T. Schell Company	Dec. 28, 1911	2,859 00
North Bay	"	Supply of coal	North Bay Fuel Company	Sept. 21, 1911	641 19
Ontario	Post Offices Generally	Sorting cases	The Berlin Interior Hardwood Co. Ltd	July 17, 1911	3,090 00
Orangeville	Post Office Building	Installation of electric light wiring and fittings	Hall & Dollery	May 13, 1911	438 00
"	Post Office	Supply of coal	C. C. G. Hannah	Sept. 6, 1911	165 70
Orillia	"	"	H. A. Raney	Aug. 25, 1911	244 76
Oshawa	"	"	David Keith	Sept. 14, 1911	123 50
"	"	"	C. V. Lauder	" 18, 1911	60 75
"	"	"	D. Drew & Son	" 11, 1911	61 25
Ottawa	Plaza	Construction of	John O'Toole & W. H. McGillivary	May 16, 1911	236,000 00
"	Printing Bureau	Boilers	P. J. Powers & Co. Ltd	" 31, 1911	3,400 00
"	Parliament Grounds	Blasting iron fence and gates	The Canadian Sand & Blast Co. Ltd	June 10, 1911	1,500 00
"	Victoria Museum	Fittings	The J. T. Schell Company	" 12, 1911	1,356 00
"	Rideau Hall	Laundry and cottages; electric light wiring	Marchand & Donnelly	" 28, 1911	323 00
"	Public Buildings	Supply of coal	John Heney & Son, Ltd	July 14, 1911	64,305 00
"	Rideau Hall	Semi-detached cottages	August Boehmer	" 27, 1911	7,250 00
"	Post Office	Fittings	R. A. Sproule	Aug. 2, 1911	1,100 00
"	Rideau Hall Grouuds	Garage	A. G. Marshall	" 4, 1911	15,100 00
"	Public Buildings	Lighting of	The Ottawa Electric Company	" 12, 1911	1 75 per lamp
"	Experimental Farm	Tobacco barn	S. A. Matte	" 22, 1911	6,500 00
"	Public Buildings	Supply of ice	The Charlebois Pure Ice Company	" 23, 1911	0 25 per 100 lbs.
"	Experimental Farm	Supply of coal	O'Reilly & Company	Sept. 26, 1911	1,393 52
"	Observatory	"	"	" 26, 1911	
"	Rideau Hall	Cloak room	A. G. Marshall	Oct. 17, 1911	26,484 00
"	Census Branch	Fittings	E. P. McGrath & Co.	Nov. 10, 1911	3,819 00
"	Blackburn Building	Metallic fittings	The Eclipse Manufacturing Co. Ltd	Feb. 28, 1912	1,206 00
Owen Sound	Post Office	Alteration to fittings	The J. T. Schell Company	June 7, 1911	389 00
"	"	Supply of coal	The Davis Smith Malone Co. Ltd	Sept. 23, 1911	262 81
Paris	"	"	Geo. E. Taylor	Aug. 25, 1911	138 26
Parkhill	"	"	W. E. Mark & Company	" 27, 1911	178 53
Pembroke	"	"	Dunlop & Company	Sept. 14, 1911	294 32
Peterborough	"	"	W. Scott, Ltd	Aug. 21, 1911	315 14
"	Custom House	"	The Peterborough Fuel & Cartage Company	Sept. 12, 1911	199 92
"	Post Office	Addition to heating apparatus	C. A. J. Duranceau	Dec. 22, 1911	1,250 00

No. 1.—CONTRACTS let by the Department of Public Works of Canada, &c.—*Continued.*

Works.			Names of Contractors.	Date of Contract.	Amount.
					$ cts.
PUBLIC BUILDINGS.—*Continued.*					
Ontario.—Continued.					
Picton	Post Office	Supply of coal	W. H. Lake	Sept. 23, 1911	231 75
Port Arthur	"	"	Louis Walsh Coal Company	" 21, 1911	387 90
Port Hope	"	"	J. M. Rosevear & Company	" 11, 1911	291 50
Port Perry	Public Building	Construction of	W. J. Trick	Nov. 29, 1911	22,475 00
Prescott	Custom House	Supply of coal	Jas. Buckley	Sept. 23, 1911	122 00
"	Post Office	"	"	" 23, 1911	183 00
Renfrew	"	"	Jas. Ward	" 5, 1911	302 97
Sarnia	"	"	W. A. Brown	Oct. 10, 1911	340 00
Sault Ste. Marie	"	"	The Superior Dock Coal & Metal Company	Sept. 23, 1911	1,276 99
Seaforth	Public Building	Construction of	Thos. McKenzie	July 4, 1911	27,500 00
Smiths Falls	Post Office	Supply of coal	Foster & Company	Sept. 23, 1911	211 45
Stratford	"	"	Andrew Johnston & Son	" 23, 1911	360 25
Strathroy	"	"	Scott & Gillies	" 21, 1911	218 55
St. Mary's	Post Office	Supply of Coal	James Armstrong	Sept. 13, 1911	292 00
St. Thomas	"	"	W. Scarrow & Company	" 25, 1911	319 30
Supply of Sorting Cases for Post Offices generally			The Burton & Baldwin Manuf'g. Co., Ltd.	Feby. 23, 1912	1,737 00
Tilbury	Public Building	Construction of	John W. Pigott & Son	Sept. 11, 1911	20,000 00
Toronto	Post Office	Extension of Freight Elevator	Otis Fensom Elevator Company	June 7, 1911	1,500 00
"	Central Post Office	Fittings	The J. T. Schell Company	Sept. 20, 1911	1,505 00
"	Examining Warehouse	Supply of Coal	P. Burns & Company	" 21, 1911	
"	Custom House	"	The Connell Anthracite Mining Co.	" 23, 1911	985 18
"	Post Office	"	" " " "	" 23, 1911	1,385 51
"	Examining Warehouse	"	" " " "	" 23, 1911	1,636 32
"	Custom House	"	The Conger Coal Company	" 23, 1911	35 50
"	Post Office	"	" " "	" 23, 1911	64 80
"	P.O. Station "C"	"	" " "	" 23, 1911	164 63
"	" " "F"	"	" " "	" 23, 1911	283 23
"	" " "D"	"	" " "	" 23, 1911	167 31
"	Revenue Office	"	" " "	" 23, 1911	232 99
Trenton	Post Office	"	Chas. Crowe	" 25, 1911	213 60
Uxbridge	Public Building	Construction of	David Meyer	Dec. 28, 1911	25,000 00
Walkerton	Post Office	Supply of Coal	S. W. Vogan	Sept. 26, 1911	198 50
Welland	"	"	S. L. Lambert	Oct. 9, 1911	233 20

Whitby	"	"	E. R. Blow	Sept. 5, 1911	193 60
Wingham	"	"	J. A. McLean	" 18, 1911	237 22
Woodstock	"	"	The McIntosh Coal Company	Aug. 16, 1911	304 60
		Manitoba.			
Brandon	Experimental Farm	Supply of Coal	R. Lane	Sept. 2, 1911	138 15
"	" "	"	Barclay & O'Hara	" 21, 1911	95 04
"	Post Office	"	" "	" 21, 1911	
"	Immigration Building	"	J. F. Cumming & Company	" 2, 1911	313 74
Dauphin	Post Office	"	Windatt & Company	" 21, 1911	609 28
Emerson	"	"	" "	" 21, 1911	252 92
"	"	"	H. H. Rott & Son	Oct. 9, 1911	30 00
Neepewa	"	"	Windatt & Company	Sept. 21, 1911	261 90
Portage la Prairie	Armoury Building	Construction of	Snyder Bros	June 5, 1911	26,400 00
" "	Public Building	Supply of Coal	Chas. J. Sharp	Sept. 20, 1911	14 92
" "	"	"	D. C. Adams Coal Co.	" 23, 1911	375 76
Selkirk	Post Office	"	Windatt & Company	" 21, 1911	427 84
St. Boniface	"	"	The Western Coal Company	" 25, 1911	325 92
Winnipeg	Immigration Hall No. 1	"	" " "	" 25, 1911	1,705 31
"	" " No. 2	"	" " "	" 25, 1911	819 38
"	" " No. 3	"	" " "	" 25, 1911	211 11
"	New Post Office	"	" " "	" 25, 1911	3,031 86
"	Old Post Office	"	" " "	" 25, 1911	1,041 62
"	New Examining Warehouse	"	" " "	" 25, 1911	2,303 31
"	Post Office, Station "B"	"	" " "	" 25, 1911	418 50
"	Old Post Office	Blinds	Martel Stewart Co	May 26, 1911	1,337 84
"	Old Post Office	Fittings	The J. T. Schell Company	Sept. 20, 1911	2,109 00
		Saskatchewan.			
Battleford	Post Office	Interior Fittings	The Berlin Interior Hardwood Co., Ltd	April 3, 1911	2,225 00
"	Post Office Building	Heating Apparatus	The Municipal Light, Heat & Power Co., Ltd	May 1, 1911	2,422 00
Gravelbourg	Public Building	Construction of	Henry Boisvert	Sept. 30, 1911	3,975 00
Humboldt	"	"	The Brown Construction Co	Aug. 16, 1911	37,673 00
Indian Head	Experimental Farm	Supply of Coal	John Hunter	Sept. 20, 1911	375 00
"	Forest Nursery	"	"	" 20, 1911	708 25
Lloydminster	Immigration Hall	"	Jas. Vincent	Aug. 31, 1911	183 80
Maple Creek	Post Office	"	Windatt & Company	Sept. 21, 1911	301 88
Melfort	Public Building	Construction of	The J. McDiarmid Company	Dec. 26, 1911	37,900 00
Moosejaw	Post Office	Supply of Coal	Windatt & Co.	Sept. 21, 1911	851 00
"	"	"	City Ice & Coal Co., Ltd.	Oct. 14, 1911	95 85
"	Public Building	Construction of	The J. McDiarmid Company	Nov. 25, 1911	260,000 00
Prince Albert	Post Office	Supply of Coal	Windatt & Compay	Sept. 21, 1911	312 42
Regina	"	Elevator	Otis Fensom Elevator Co., Ltd	May 11, 1911	6,380 00
"	"	Supply of Coal	Whitmore Bros	Oct. 14, 1911	1,826 51
"	Dominion Lands	"	" "	" 14, 1911	536 97
"	Immigration Building	"	" "	" 14, 1911	41 48

No. 1.—CONTRACTS let by the Department of Public Works of Canada, &c.—*Continued.*

Works.			Names of Contractors.	Date of Contract.	Amount.
		PUBLIC BUILDINGS—*Continued.*			
		Ontario—Continued.			$ cts.
Regina	Post Office	Elevator Enclosure	The Dennis Wire & Iron Works Co., Ltd.	Jan. 10, 1912	3,640 00
Saskatoon	"	Supply of Coal	Windatt & Co	Sept. 23, 1911	777 24
"	Immigration Building	"	D. C. Adams Coal Company	" 23, 1911	
Yorkton	Post Office	"	Imperial Elevator & Land Co.	" 18, 1911	476 25
Weyburn	Public Building	Construction of	Navin Bros	Oct. 9, 1911	48,911 00
		Alberta.			
Calgary	Customs	Alterations and additions to	The J. T. Schell Company	Sept. 20, 1911	1,091 00
"	Immigration Office	Supply of Coal	C. S. Lott	" 21, 1911	359 15
"	Post Office	"	"	" 21, 1911	1,367 97
"	"	"	Windatt & Company	" 21, 1911	1,438 47
Edmonton	"	"	The Western Coal Co.	" 20, 1911	311 15
"	"	"	Windatt & Company	" 20, 1911	1,846 88
Lethbridge	"	"	New Barnes Co.	Oct. 12, 1911	38 90
"	"	"	C. S. Lott	Sept. 21, 1911	475 20
MacLeod	Custom House	"	Geo. Shelding	Oct. 10, 1911	177 70
Strathcona	Armoury	Construction of	The Brown Construction Co., Ltd.	June 26, 1911	33,668 00
"	Public Building	"	M. A. Pigott & Son	" 18, 1911	47,894 00
"	Immigration Building	Supply of Coal	The Dawson Coal Company, Ltd.	Aug. 22, 1911	213 10
Wetaskiwin	Public Building	Construction of	The Brown Construction Co., Ltd.	" 15, 1911	25,650 00
		British Columbia.			
Chilliwack	Public Building	Construction of	Edward Hunt	Dec. 27, 1911	41,375 00
Cranbrook	"	"	McCallum & Company	Aug. 19, 1911	48,542 00
Grand Forks	"	"	B. Lequime	" 1, 1911	43,202 00
Nelson	Post Office Building	Addition to	John Burn and Son	April 13, 1911	9,300 00
"	Post Office Fittings		The J. T. Schell Co.	Feb. 26, 1912	3,783 00
Vancouver	Examining Warehouse	Construction of	The J. McDiarmid Co.	June 20, 1911	324,435 00

"	Public Building Railway Mail Service Metallic Fittings	The Eclipse Manufacturing Co., Ltd	Sept. 18, 1911	4,495 00
Vernon	Public Building—Installation of electric light wiring and fittings	The Empire Electric Manufacturing Co. of Ottawa, Ltd	April 4, 1911	1,893 00
"	Public Building—Heating Apparatus	The Colbert Plumbing & Heating Co., Ltd	May 4, 1911	2,135 00
	HARBOURS AND RIVERS.			
	Nova Scotia.			
Breen's Pond	Breakwater	T. D. Morrison	Aug. 8, 1911	13,190 00
Brooklyn	"	Nova Scotia Construction Co., Ltd	Sept. 9, 1911	119,650 00
"	Supply of 20,000 barrels of cement for wharf	Canada Cement Company, Limited	Dec. 16, 1911	$1.97½ per barrel
Cap Rouge	Boat landing wharf	Robt. & Bart. Musgrove	Aug. 30, 1911	15,884 00
Digby	Dredging	Beazley Bros., Ltd	" 22, 1911	(Class "B") 40c. per cubic yard.
French River	Breakwater	Robt. & Bart. Musgrove	Dec. 30, 1911	4,600 00
Grand Etang	Dredging	V. T. Bartram	May 24, 1911	(Class "C") 37½c. per cubic yard.
La Planche River	"	E. R. Reid	Sept. 7, 1911	(Class "B") 65c. per cubic yard.
Larry's River	"	The Atlantic Dredging Co.	" 14, 1911	(Class "B") 45c. per cubic yard.
Little Anse	Breakwater	T. D. Morrison	" 21, 1911	21,500 00
Mahone Bay	Dredging	Beazley Bros., Ltd	Aug. 28, 1911	(Class "B") 40c. per cubic yard.
Margaree Harbour	"	The Atlantic Dredging Co	Sept. 12, 1911	(Class "B") 50c. per cubic yard.
Melford	Wharf and stone approach	Geo. Y. Grant	" 1, 1911	5,394 00
Mulgrave	Construction of wharf	S. W. Hagerty	" 18, 1911	3,000 00
St. Joseph	Breakwater	D. W. B. Reid.	Jan. 13, 1912	10,275 00
West Advocate	"	J. E. & H. Bigelow	Feb. 2, 1912	16,400 00
West Bay	Dredging	The Atlantic Dredging Company	Sept. 12, 1911	(Class "B") 28c. per cubic yard.
White's Cove	Extension to public wharf	J. B. Melanson	May 31, 1911	5,800 00
	Prince Edward Island.			
Gordon's Point	Construction of repairs to wharf	N. B. Rankin & I. M. Gordon	Dec. 20, 1911	2,400 00
Grand River (South)	Repairs and re-construction of wharf	R. McNeill	" 20, 1911	6,499 00
Summerside	Dredging	The Terminal Dredging Co., Ltd	Sept. 11, 1911	(Class "B") 35c. per cubic yard.
Wood Islands	Extension to southern breakwater	W. Compton & A. G. Ross.	Mar. 4, 1912	7,036 00
	New Brunswick.			
Buctouche Beach	Dredging	Peter England	Sept. 7, 1911	(Class "B") 36c. per cubic yard.
Campbellton	"	A. & R. Loggie	Aug. 23, 1911	(Class "B") 50c. per cubic yard.

No. 1.—CONTRACTS let by the Department of Public Works of Canada, &c.—*Continued.*

Works.		Names of Contractors.	Date of Contract.	Amount.
				$ cts.
HARBOURS AND RIVERS—*Continued.*				
Nova Scotia—Continued.				
Cape Tormentine	Dredging	General Construction & Dredging Co., Ltd	Sept. 23, 1911	(Class "B") 40c. per cubic yard.
Dalhousie	Breakwater	T. P. Charleson	Aug. 9, 1911	23,440 00
Dipper Harbour	Dredging	J. S. Gregory	Aug. 22, 1911	(Class "B") 65c. per cubic yard.
" "	"	J. S. Gregory	Sept. 29, 1911	(Class "B") 50c. per cubic yard.
Grandigue	Public wharf	T. P. Charleson	Sept. 9, 1911	5,895 00
Grand Dune Flats	Dredging	W. B. Tennant & R. O'Leary	Mar. 6, 1912	(Class "B") 11c. per cubic yard.
Loggieville	"	The W. J. Poupore Co. Ltd	Aug. 22, 1911	(Class "B") 33c. per cubic yard.
Ox Island	"	Maritime Dredging & Construction Co	Sept. 7, 1911	(Class "B") 24½c. per cubic yard.
Point Sapin	Breakwater	W. Taylor	Aug. 17, 1911	19,620 00
Raft Channel	Dredging	Maritime Dredging & Construction Co	Sept. 7, 1911	(Class "B") 24½c. per cubic yard.
Richibucto	Extension to breakwater	T. P. Charleson	May 5, 1911	20,995 00
"	" to public wharf	Thomas O. Murray	May 26, 1911	17,000 00
"	Dredging	The W. J. Poupore Co., Ltd.	Aug. 23, 1911	(Class "B") 30c. per cubic yard.
" (South Beach)	Breakwater	T. P. Charleson	Dec. 11, 1911	11,895 00
Sackville	Wharf	Oscar & Warren Downey	April 6, 1911	30,643 00
Sand Point (St. John West)	Fire protection, &c., to No. 6 extension and No. 7 warehouse	Fred. M. Barr	May 22, 1911	3,650 00
Scotchtown	Dredging	J. S. Gregory	Sept. 19, 1911	(Class "B") 23½c. per cubic yard.
Shediac	"	The General Construction & Dredging Co. Ltd.	Sept. 23, 1911	(Class "B") 38c. per cubic yard.
Shippegan Gully	"	The W. J. Poupore Co. Ltd	Aug. 23, 1911	(Class "B") 40c. per cubic yard.
St. Andrews	"	The Dominion Dredging Co. Ltd.	May 17, 1911	Sched. of prices.
St. George	"	Maritime Dredging & Construction Co	Aug. 22, 1911	(Class "B") 49c. per cubic yard.
St. John Harbour Courtenay Bay	Construction of works	Norton Griffiths & Co. Ltd.	Mar. 25, 1912	7,500,000 00

St. John West	Installation of lighting system in No. 6 extension and No. 7 warehouses	The Vaughan Electric Co. Ltd.	May 1, 1911	1,361 94
" "	Wharves	M. Connolly	Dec. 12, 1911	760,285 00
St Leonard	Addition to west approach (International bridge)	C. L. Cyr.	Sept. 8, 1911	1,575 00
St. Stephen	Dredging	Maritime Dredging & Construction Co	Aug. 22, 1911	(Class "B") 49c. per cubic yard.
Trynor's Cove	Wharf	J. J. Kane	June 12, 1911	2,998 00
	Quebec.			
Aylmer	Construction of two (2) crib ice-breakers for wharf protection	T. & J. Moran	Dec. 7, 1911	1,451 00
Batiscan River	Dredging	The W. J. Poupore Co. Ltd	Aug. 29, 1911	(Class "B") 15c. per cubic yard.
Berthierville	"	The W. J. Poupore Co. Ltd	Aug. 22, 1911	(Class "B") 14c. per cubic yard.
Bonaventure River	"	Frs. Lemoine	May 24, 1911	(Class "C") 24½c. per cubic yard.
Chapeau	Superstructure of steel highway bridge	The Cleveland Bridge & Engineering Co. Ltd.	Sept. 20, 1911	25,500 00
Chateauguay	Landing pier	Eugene Patenaude	May 23, 1911	7,243 84
Fassett	Wharf	T. & J. Moran	Aug. 7, 1911	5,955 40
Fort William	Wharf	L. C. McCool	Feb. 13, 1912	4,990 00
Grosse Isle	Extension to western wharf	J. A. Lemay	June 7, 1911	59,777 60
Montebello	Wharf	A. & A. O. Bélanger	Sept. 16, 1911	6,399 00
Montreal	Floating dry dock.	Canadian Vickers Ltd.	July 26, 1911	(Govt. subsidy of 3½% during 35 years.
Nicolet	Dredging	L. Cohen & Son.	Aug. 3, 1911	30½c. per c. yd.
Norway Bay	Public wharf.	T. & J. Moran	Oct. 7, 1911	10,040 00
Papineauville	"	T. & J. Moran	Sept. 29, 1911	6,995 00
Petit Débarquement	Wharf	L. A. Cloutier & P. P. Gaudreau.	April 20, 1911	9,257 33
Quebec Harbour	Dredging	Dominion Dredging Company, Ltd.	May 17 1911	(Classes 'B' & 'C') 20c. per c. yd.
" "	Timber retaining wall	La Compagnie Etienne Dussault	June 17, 1911	18,320 15
River Saguenay	Dredging	Continental Dredging Co. Ltd	Feb. 5, 1912	(Class "B") 32½c. per cubic yard.
River St. Francis	"	Bastien, Laurin & Leitch	Sept. 22, 1911	(Class "B") 16c. per cubic yard.
River St. Maurice	"	Antoine St. Pierre	Aug. 18, 1911	(Class "B") 14c. per cubic yard.
Ste Famille	Extension to wharf.	Nap. Trudel	April 10, 1911	18,963 68
St. Pierre les Becquets	Dredging	The W. J. Poupore Co. Ltd	Aug. 23, 1911	(Class "B") 15c. per cubic yard.
St. Valier	Addition to landing pier.	A. Duchesneau	Jan. 13, 1912	11,550 00
Temiskaming Dam	Supply of 6,000 barrels of cement	Canada Cement Co. Ltd.	Dec. 16, 1911	$2.09 per barrel.
Trois Rivieres	Additional filling to new coal dock	J. J. Collins & V. W. Giroux.	Mar. 18, 1912	38,400 00
	Ontario.			
Ashbridge's Bay (Toronto)	Dredging	R. Weddell and Company	Aug. 17, 1911	(Class "B") 12c. per cubic yard.

No. 1.—CONTRACTS let by the Department of Public Works of Canada, &c.—*Continued.*

Works.		Names of Contractors.	Date of Contract.	Amount.
				$ cts
HARBOURS AND RIVERS.—*Continued.*				
Ontario—Continued.				
Beaumaris	Wharf and stone approach	Union Construction Co. Ltd	Sept. 11, 1911	23,994 00
Big Island	Dredging	R. Weddell and Company	" 14, 1911	(Class "A") $4.50 per cubic yard.
Brockville	Extension to Tunnel Bay dock	Gowan & Whitney	Oct. 11, 1911	14,252 25
Byng Inlet	Dredging	The C. S. Boone Dredging & Construction Co. Ltd.	Mar. 5, 1912	(Class "A") $5.49 per cubic yard. (Class "B") 25c. per cubic yard.
Echo Bay	Dredging	Robertson, Ferrier and Kennedy	Sept. 23, 1911	(Class "B") 22c. per cubic yard.
Gordon Creek	Construction of a dam, &c.	Morrow and Beatty	" 20, 1911	30,910 00
Kincardine	Dredging	The Dredging and Drainage Co. of Ontario, Ltd.	July 31, 1911	(Class "B") 17½c. per cubic yard.
Kingston	Renewal and reconstruction of wharves, &c	Gowan and Whitney	Oct. 11, 1911	15,909 70
Kingsville	Dredging	Windsor Dredging Co., Limited	Sept. 11, 1911	(Class "B") 29½c. per cubic yard.
McKellar River	Dredging	Great Lakes Dredging Co., Limited	Dec. 15, 1911	(Class "A") $3.85 per cubic yard. (Class "B") 17½c. per cubic yard.
Midland Harbour	Dredging	Canadian Dredging Company, Ltd	Dec. 20, 1911	(Class "B") 8c. per cubic yard.
Nigger & Telegraph Island	Dredging	R. Weddell & Company	July 17, 1911	Sched. of prices.
North Bay	Breakwater	Edward Conroy	Dec. 27, 1911	13,900 00
Penetanguishene	Dredging	R. Weddell and Company	Aug. 17, 1911	(Class "B") 12c. per cubic yard.
Petewawa	Public Wharf,	L. C. McCool	Mar. 29, 1912	3,290 00
Picnic Islands	Dredging	C. S. Boone, Dredging and Cons. Co., Ltd.	Aug. 19, 1911	(Class "A") $1.70 per cubic yard.
Port Arthur	Dredging at entrance to Dry Dock	The Great Lakes Dredging Co., Ltd	May 29, 1911	(Class "C") 12c. per cubic yard.

Port Arthur	Dredging at Fish Dock and Thunder Bay	W. E. Phin	May 24, 1911	(Class) 13c. per cubic yard.
Port Arthur, Bare Point	Breakwater	The Thunder Bay Contracting Co., Ltd	Sept. 18, 1911	361,800 00
Port Arthur	Additional works to cribs of Breakwater	M. J. Hogan	Nov. 30, 1911	34,625 00
Port Elgin	Dredging	The Dredging & Drainage Co. of Ontario, Ltd.	July 31, 1911	( ) 17½c. per cubic yard.
Port Hope	Dredging	R. Weddell and Company	Oct. 11, 1911	(Class "B") 24½c. per cubic yard.
Port Stanley	Breakwater and dredging	M. J. Hogan	Dec. 30, 1911	210,376 00
River Thames	Dredging	W. E. Phin	Aug. 3, 1911	(Class "B") 35c. per cubic yard.
Salt Point Presqu'ile	Dredging	R. Weddell and Company	" 17, 1911	(Class "B") 28c. per cubic yard.
Thessalon	Breakwater	David Porter	Nov. 23, 1911	14,900 00
Thornbury	Breakwater and wharf extension	R. Weddell and Company	Dec. 20, 1911	23,895 00
Tiffin	Dredging	Canadian Dredging & Construction Co., Ltd	May 17, 1911	Sched. of prices.
Toronto Harbour	Dredging Eastern Channel	R. Weddell and Company	" 2, 1911	16c. per cu. yd.
Toronto Harbour	Construction of a Floating dry dock	The Polson Iron Works, Limited	Oct. 3, 1911	Subsidy of 3 p.c. during 20 yrs.
Victoria Harbour	Dredging	Canadian Dredging & Construction Co., Ltd.	May 17, 1911	Sched. of prices.
Waubaushene (Matchedash Bay.)	Dredging	Penetanguishene Dredging Company	" 24, 1911	Sched. of prices.
Wiarton	Dredging	C. S. Boone, Dredging and Cons. Co., Ltd.	Aug. 24, 1911	(Class "B") 26c. per cubic yard.
	Manitoba.			
Gimli	Extension to Protection pier	Buchanan & Fraser	Jan. 9, 1912	9,910 00
	British Columbia.			
Digby Island (Prince Rupert)	Wharf and approaches	Naylor Bros	Jan. 19, 1912	57,625 00
Prince Rupert	Construction of Floating dry dock	The Grand Trunk Pacific Railway Company	Nov. 30, 1911	Govt. Subsidy of 3½ p.c. during 25 years.
Surf Inlet	Wharf	Mark Hyatt	Dec. 26, 1911	4,150 00
	Vessels—Dredges and Plant.			
Assembling and erection of pieces for Rock Breaker, Victoria Harbour, B.C.		The Victoria Machinery Depot Co., Ltd.	April 20, 1911	12,150 00
Supply of Brushes for Departmental Dredging Plant for season 1911		Daly and Morin	May 24, 1911	Sched. of prices.
" Paints and Oils	" " " "	The Canada Paint Company, Limited	" 24, 1911	Sched. of prices.
" Hardware	" " " "	Lewis Bros., Limited	" 24, 1911	Sched. of prices.
" "	" " " "	The Gen'l Supply Co. of Canada, Limited	" 24, 1911	Sched. of prices.
" "	" " " "	Scythes and Company, Limited	" 24, 1911	Sched. of prices.
" Chains	" " " "	Lewis Bros., Limited	" 24, 1911	Sched. of prices.
" Manilla rope	" " " "	The Richelieu Cordage Company	" 24, 1911	Sched. of prices.
" Steel pipes	" " "	The Gen'l Supply Co. of Canada, Limited	" 24, 1911	Sched. of prices.

No. 1.—CONTRACTS let by the Department of Public Works of Canada, &c.—*Continued.*

Works.	Names of Contractors.	Date of Contract.	Amount.
			$ cts.
HARBOURS AND RIVERS.—*Continued.*			
Ontario.			
Supply of Packing for Departmental Dredging Plant for season 1911	The Dunlop Tire & Rubber Goods Co., Ltd	May 24, 1911	Sched. of prices.
" " " " " "	The William C. Wilson and Company	" 24, 1911	Sched. of prices.
Iron work in connection with three 260 cubic yard Dump Scows for New Elevator Dredge at Vancouver, B.C.	Wallace Shipyard, Ltd	" 27, 1911	11,400 00
Supply of Hose for Departmental Dredging Plant for season 1911	The Canadian Consolidated Rubber Co., Ltd	" 31, 1911	Sched. of prices.
" Oils and Greases " " " "	The British American Oil Co., Ltd	" 31, 1911	Sched. of prices.
" " " " " "	The William C. Wilson & Company	" 31, 1911	Sched. of prices.
" Steamfittings " " " "	Lewis Bros., Limited	" 31, 1911	Sched. of prices.
" " " " " "	Scythes and Company, Limited	" 31, 1911	Sched. of prices.
" " " " " "	W. R. Cuthbert	" 31, 1911	Sched. of prices.
" Wire rope " " " "	The Dominion Wire Rope Company, Limited	July 10, 1911	Sched. of prices.
" Coal for Departmental Dredging Plant for (Quebec) season 1911	The Canadian Import Company	" 24, 1911	14,100 00
" " " " " " "	The Glode Company, Limited	" 24, 1911	400 00
" " " " (Ontario) "	R. Crawford	Aug. 7, 1911	Sched. of prices.
" " " " " " "	John Heney & Son, Limited	" 26, 1911	Sched. of prices.
Construction of alterations to 20 buckets for Dredge "W. S. Fielding"	The St. John Iron Works, Ltd	Sept. 11, 1911	7,497 50
Construction of Hydraulic Suction Dredge	Estate of James Fleming	" 27, 1911	82,500 00
Alterations and additions to 20 buckets for Dredge "W S. Fielding"	Estate of James Fleming	" 28, 1911	7,497 50
Construction of three 260 cubic yard Dump Scows for Vancouver, B.C	Chas. Moore	Nov. 28, 1911	22,200 00
Supply of White Oak (Victoria Island) Ottawa, Ont	McAuliffe-Davis Lumber Company	Jan. 20, 1912	1,192 17
" B. C. Fir " "	Mason, Gordon & Company	" 20, 1912	5,439 05
" 500 Tons of Coal for "Timiskaming Dam"	James Sowards Coal Company	Feb. 17, 1912	$5.38 per ton.

STATEMENT No. 2

PROPERTIES PURCHASED OR SOLD

No. 2.—STATEMENT of properties purchased or sold by the Department of Public Works of Canada, from April 1, 1911, to March 31, 1912.

Date of Conveyance.	Vendors.	Purchasers.	Description of Property.	For what Purpose.	Area.	Price.
						$ cts.
April 3, 1911..	John Fougere	His Majesty	Sale of land at Breen's Pond, N.S	Breakwater	15,060 sup. feet	75 00
May 1, 1911..	J. V. B. Bingay	"	Sale of land at Yarmouth, N.S.	Public building site	140 ft. x 30 ft	10,000 00
" 11, 1911..	J. C. Nieforth	"	Sale of four Lots at Three Fathom Harbour or Porter's Lake, N.S.	Harbour improvements	3·64 acres	50 00
" 15, 1911..	Notice of expropriation		Expropriated land at Dublin Shore, N.S.	Breakwater	3,400 sq. ft	
" 18, 1911..	J. C. Taggart	His Majesty	Expropriated land at Ottawa, Ont	Site for explosives	3·9 acres	6,350 00
June 1, 1911..	The Port Whitby Harbour Co	"	Sale of Harbour together with lands, piers, breakwaters at Whitby, Ont	Government purposes		20,000 00
" 1, 1911..	Hertel Duchesne *et ux*	"	Sale of land at North Plantagenet, Ont.	Site for wharf	2,250 sq. ft	100 00
" 2, 1911..	Notice of expropriation		Expropriated land at Hillsborough, N.B.	Public building site		
" 5, 1911..	The City of St. John, N.B.	His Majesty	Sale of land at St. John, N.B	For providing facilities for traffic, Government purposes		1 00
" 6, 1911..	Notice of expropriation		Expropriated land at Vogler's Cove, N.S.	Approach to wharf	0·32 acre	
" 22, 1911..	H. Roch	His Majesty	Sale of Lots Nos. 139, 142 and 144 at Berthierville, Que	For wharf	7,254 sq. ft	3,000 00
" 29, 1911..	A. L. Horton	"	Sale of Lots Nos. 1 and 2, block 16, Vegreville, Alta	Public building site	60 ft. x 130 ft	4,800 00
July 3, 1911..	Ferris Alteen	"	Release of land ½ of Lot No. 195, Expropriated land at Latchford, Ont	For dam		100 00
" 4, 1911..	Annie Joseph	"	Release of Lots Nos. 165 and 172, expropriated land at Latchford, Ont	For Government dam		300 00
" 5, 1911..	P. F. Beaulieu	"	Release of north ½ of Lot No. 195, expropriated land at Latchford, Ont	" "		175 00
" 6, 1911..	A. Chamandy	"	Release of Lot No. 84, expropriated land at Latchford, Ont	" "		125 00
" 7, 1911..	E. A. Muir *et ux*	"	Sale of land, part of Lot No. 18 at Port Arthur, Ont	Armoury site		775 00
" 14, 1911..	A. Chamandy	"	Release of Lot No. 133, expropriated land at Latchford, Ont	For Government dam		150 00
" 19, 1911..	Hercule Côté	"	Sale of land-portion of Lot No. 13C, River aux Vases, Que	Government purposes	6,115 sq. ft	25 00
" 19, 1911..	Treffle Côté	"	Sale of land-portion of Lot No. 14B, River aux Vases, Que	" "	6,100 sq. ft	25 00
" 21, 1911..	Rev'd. Oscar Cousineau	"	Bill of sale of Tug "Alva"	" "		3,500 00
" 22, 1911..	Dalhousie Lumber Co., Ltd.	"	Sale of lands at Dalhousie, N.B.	For wharf	61·100 acres	1,600 00
" 24, 1911..	A. H. Brown	"	Release for expropriated lands at Craven Dam, Sask	Government purposes	268·65 acres	8,775 71

No. 2.—STATEMENT of properties purchased or sold by the Department of Public Works of Canada, from April 1, 1911, to March 31, 1912—*Concluded.*

Date of Conveyance.	Vendors.	Purchasers.	Description of Property.	For what Purpose	Area.	Price.
						$ cts.
July 27, 1911..	Mary McCosh.....	His Majesty....	Sale of land at Bracebridge, Ont.....	Public building site.....	66 ft. x 132 ft.....	4,000 00
" 27, 1911..	Arthur Lamarsh.....	"	Sale of land at Wheatley, Ont	For storing ground.....	2,008 acres.....	1 00
" 28, 1911	Michael McDougall.....	"	Sale of land at Upper Washabuck, N.S.	For wharf purposes	3,600 sq. ft.....	10 00
" 29, 1911..	W. H. Stewart.	"	Release of Lots Nos. 156 and 164, expropriated land at Latchford, Ont.....	For Government dam...	.....	275 00
Aug. 4, 1911 .	Eusebe Poirier	"	Sale of land at Cap Rouge, N.S.....	For wharf	31,000 sup. ft	65 00
" 8, 1911..	P. Clancy *et ux*	"	Sale of land at Mulgrave, N.S.....	"	....	1,350 00
" 9, 1911..	Valérie Frénette.....	"	Sale of land at Petit Rocher, N.B.....	For breakwater.....	1·11 acres.....	300 00
" 10, 1911..	T. L. Reed	"	Sale of land at St. John, N.B	Public building site ...	.....	12,000 00
" 12, 1911..	Duncan Gillis..... ...	"	Sale of land at Judique, N.S.....	For breakwater.....	58,000 sup. ft	300 00
" 12, 1911..	Hugh Gillis.	"	Sale of land at Judique, N.S..	"	36,000 sup. ft	200 00
" 17, 1911	J. C. Alquire.	"	Sale of northerly part of Lot No. 13, block "F" at Athens, Ont	For public building site..	64 ft. x 104 ft.....	1,200 00
" 22, 1911..	James Morgan.....	"	Sale of land at Maisonneuve, Que.....	" " ..	12,500 ft.....	8,437 00
Sept. 7, 1911..	M. A. Chiasson.	"	Sale of lands, Lot No. 1 and Lot No. 2 at St. Joseph, N.S.....	For breakwater.	1⅛ acres..... .. ¾ acre	690 00
" 18, 1911..	A. L. Langman.....	....	Sale of Lots Nos. 11 and 12, block 6, at Camrose, Alta	For public building site..	....	8,000 00
" 23, 1911..	A. & R. Loggie	"	Expropriation of land at Richibucto Beach, N.B.....	For south breakwater...	1·21 acres.....	
" 25, 1911..	Francis Murphy	"	Sale of lands at Hull, Que	For Government boom..	9.88 acres	3,670 00
" 29, 1911..	Imperial Realty Co., Ltd ...	"	Transfer of Lots Nos. 15, 16, 17 and 18, block 18, Gravelbourg, Sask	Public building site.....	.. ..	400 00
Oct. 2, 1911..	Marie L. Beaucage.....	"	Release of Lot No. 157 at Latchford, Ont. (expropriated land).....	For Government dam ...	....	1,700 00
" 2, 1911..	His Majesty.....	D. O' Connor...	Sale of Government Reserve on Victoria Island, Chats Rapids (Ottawa River).	Private enterprise.....	14·71 acres.....	1,471 00
" 3, 1911..	C. H. Brannan	His Majesty....	Sale of lands at St. John, N.B.....	Immg. hospital..... ...	150 ft. x 250 ft ...	20,000 00
" 5, 1911..	Dept. Railways & Canals...	Pub. Works Dept	Transfer of 1,800 sq. ft. at North Sydney, N.S.....	Immg. freight shed.....	.....	
" 14, 1911..	R. E. Moore *et ux*..... ...	His Majesty....	Sale of land, part of Lot No. 28 at Lion's Head, Ont. also water Lot	....	0·51 acres ..... 1,800 sq. ft.. ...	350 00
Nov. 18, 1911.	W. G. Carr.....	"	Release of Lot No. 217, Latchford, Ont. (Expropriated land.).	For Government dam...	....	225 00
" 21, 1911..	C. W. N. Kennedy	"	Transfer of land, Victoria Harbour, Man.	For piling ground.....	38,500 sq. ft. ...	1 00
" 28, 1911..	Nicola Saba	"	Release of 'S' ½ Lot No. 191, Latchford, Ont. (Expropriated land).....	For Government dam...	....	150 00
Dec. 2, 1911..	J. Stewart *et ux*	"	Sale of land at Escuminac, N.B.	For breakwater.....	0·374 acres.....	50 00
" 2, 1911..	R. L. Lewis *et ux*....	"	Sale of land at Escuminac, N.B.....	"	0·245 acres.. ...	50 00
" 4, 1911..	James Hemlow.....	" ..	Sale of land at Liscomb, N.S..	For wharf.....	765 sup. ft.....	350 00

"	7, 1911..	A. A. McLaren	"	Release of lot No. 16, Latchford, Ont.—(expropriated land.)	For Government dam..	....	100 00
"	12, 1911..	S. E. B. Bayard	"	Sale of land at St. John, N.B.	Public building site		25,000 00
"	12, 1911..	N. & L Brisson	"	Sale of wharf and land, Cadastral lot No. 419, Bande River, Que.	For wharf	½ acre	100 00
"	16, 1911..	John A. Pugsley	"	Sale of land at St. John, N.B.	Public building site		8,525 00
"	16, 1911..	C. C. Begg	"	Release of north ½ of Lot No. 178, Latchford, Ont., (expropriated land)	For Government dam		100 00
"	20, 1911..	His Majesty	A. & R. Loggie	Sale of Old Sawdust Wharf and property at Richibucto, N.B.	Private enterprise	5·37 acres	3,500 00
Jan.	5, 1912..	Provincial Gov't. of N.S.	His Majesty	Grant of land at Little Anse, N.S.	Breakwater	1½ acres	Free grant.
"	20, 1912..	James Clinkskill	"	Sale of Lots Nos. 12, 13, 14, and 15, block 145, Saskatoon, Sask.	Armoury site		47,500 00
Feb.	8, 1912..	City of Fredericton, N.B.	"	Sale of land at Fredericton, N.B.	High water wharf	0·515 acres	1 00
"	9, 1912..	P. A. Gouin	"	Sale of Lots Nos. 540, 541, and 542, Three Rivers, Que	Harbour improvements		10,000 00
"	12, 1912..	J. Goyetch	"	Sale of land at Charles Forrest's Cove, N.S.	Breakwater	8,678 sup. ft	25 00
"	19, 1912..	Robt. Dunlop	"	Sale of house and property at Toronto, Ont	For Postal motor garage.		5,000 00
"	20, 1912..	Certificate of title		Sale of portion of Lot No. 24, Grouard, Alta	For telegraph office		450 00
"	20, 1912..	Chas. A. Ghent *et ux*	His Majesty	Sale of houses and land at Toronto, Ont.	For Postal motor garage		4,700 00
"	22, 1912..	Certificate of title	"	Sale of portion of lot No. 5, Peace River Landing, Alta	For telegraph office		200 00
"	24, 1912..	J. O. Vanworth, *et ux.*	"	Sale of land at Evandale, N.B.	For wharf	$\frac{3}{10}$ acres	1 00
"	28, 1912..	The Bronson Co., Ltd.	"	Transfer of Lots Nos. 33 and 34, north side of Middle St., Victoria Island, Ottawa, Ont.	Government shipyard	80, 358½ sq. ft.	27,814 00
"	28, 1912..	The Ottawa Elect. Ry. Co.,	"	Transfer of Lots Nos. 16, 17, 18, 19 and 20, Victoria Island, Ottawa, Ont.	Government shipyard	95,913 sq. ft.	16,382 16
Mar.	8, 1912..	Notice of expropriation		Expropriation of land and properties at Ottawa, Ont.	New Deptl. buildings		Amount to be determined.
"	16, 1912..	S. P. Howard	His Majesty	Sale of Lot No. 691 and part of Lots Nos. 694, and 692, Montreal, Que	Detention hospital	11,264 sup. ft.	46,182 40
"	20, 1912..	Canada Carbide Co., L'd	"	Sale of Lots Nos. 27, 28, 29, 30, 31 and 32, Victoria Island, Ottawa, Ont.	Government shipyard		50,000 00
"	22, 1912..	C. L. McCool	"	Donation of strip of land, Lot Aa, Fort William, Que		$\frac{25}{100}$ acres	Free grant.
"	23, 1912..	Mary McKinny	"	Sale of part of Lot No. 13, Wiarton, Ont.	Public building site	2,380 sq. ft	660 00
"	23, 1912..	W. C. Woodworth *et ux*	"	Sale of lands at Delap Cove, N.S.	Wharf	$\frac{57}{100}$ acres	100 00
"	23, 1912..	S. Stevenson *et ux*	"	Sale of land at Delap Cove, N.S.	"	$\frac{1}{10}$ acres	0 25
"	26, 1912..	R. Young *et ux*	"	Sale of part of Lot No. 13, Wiarton, Ont.	Public building site	4,620 sq. ft.	1,320 00
"	27, 1912..	A. L. Gill *et al*	"	Sale of land, Sparks and Wellington Sts., Ottawa, Ont	Government purposes		15,000 00

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, August, 1, 1912.

J. A. CHASSE,
Law Clerk.

No. 3.—STATEMENT of Properties leased to and by the Department of Public Works of Canada, from April 1, 1911, to March 31, 1912.

Date of Lease.	Lessors.	Lessees.	Description of Property.	For what Purpose.	Duration of Lease.	Rental.
April 1, 1911.	John F. Weibe	His Majesty	Lease of building, Herbert Sask	Immigration purposes	Six months	$150 (for whole period.)
" 3, 1911.	J. H. Currie	"	Lease of building, Vonda, Sask.	" "	Six months	$20 per month.
" 6, 1911.	John Burn	"	Lease of building, Sedgewick, Alta.	" "	Seven months	$210 (whole period)
" 7, 1911.	His Majesty	H. G. Heay	Privilege to dredge and take away sand, False Creek and English Bay, B.C.	Private enterprise	Five years	
" 7, 1911.	"	A. J. Léger	Lease of premises No. 103 St. Patrick Street, Ottawa, Ont.	" "	Monthly tenancy.	$18 per month.
" 20, 1911.	The Imperial Realty Co., Ltd	His Majesty	Lease of Canadian, Militia and Queen Street building, Ottawa, Ont.	Government purposes	Five years	$78,468.94 per year.
" 20, 1911.	Irvine School District No. 892	"	Lease of building at Irvine, Alta	Immigration purposes	One year	$15 per month.
" 21, 1911.	His Majesty	Emily LeSueur	Lease of promises No. 113 St. Patrick Street, Ottawa, Ont.	Private enterprise	Monthly tenancy.	$18 per month.
" 22, 1911.	Mrs. E. A. Pearson.	His Majesty	Lease of Imperial Building, Ottawa, Ont.	Government purposes	Three years	$5,400 per year.
" 29, 1911.	M. Bawlf	"	Lease of two rooms in Chamber of Commerce B'ld'g, Winnipeg, Man.	Weights and Measures	Monthly tenancy.	$105 per month.
" 29, 1911.	R. J. Lank	"	Lease of seven rooms at Vegreville, Alta.	Immigration purposes	Six months	$40 per month.
May 1, 1911.	H. N. Bate & Sons, Ltd	"	Lease of premises Nos. 10 and 12 Albert Street, Ottawa. Ont.	For Customs	Five years	$1,600 per annum.
" 1, 1911.	Thistle Estate	"	Lease of ground, 2nd and 3rd flats of premises No. 26 Wellington Street, Ottawa, Ont.	For Mines Branch	One year	$1,100.
" 1, 1911.	J. C. Brennan	"	Lease of room No. 213 Trafalgar Building, Ottawa, Ont.	For Civil Service Commission.		$244 per annum.
" 1, 1911.	The Can. Pac. Railway Co	"	Lease of land at Kerrobert, Sask	Immigration Hall site		$1 per annum.
" 1, 1911.	S. & R. A. Clement	"	Lease of one room in Clement's Block, Brandon, Man.	Government purposes	One year	$40 per month.
" 11, 1911.	School District of Virden, No. 144.	"	Lease of building at Virden, Man.	Immigration purposes	One year	$250 per annum.
" 13, 1911.	John D. Higginbotham	"	Lease of premises Singer Building, Lethbridge, Alta.	Government purposes	Three years	$3,300 per annum.
" 15, 1911.	Clements Bros	"	Lease of one room in Clement's Block, Brandon, Man.	For Inspector of Forests Reserve.		$40 per month.
" 15, 1911.	Egan Estate	"	Lease of offices, 25 Sparks Street, Ottawa, Ont.	Government purposes	One year	$300.
" 17, 1911.	The Traders Bank of Canada	"	Lease of one room in Traders Bank Building, Winnipeg, Man.	Railway Commission	One year	$20 per month.

" 23, 1911.	His Majesty	A. Thériault	Leaseof premises No. 111 St. Patrick Street, Ottawa, Ont.	Private enterprise	Monthly tenancy.	$18 per month.
" 26, 1911.	Isaïe Gagnon	His Majesty	Lease of premises at Athabaska Landing.	Immigration purposes	Seven months	$15 per month.
June 1, 1911.	His Majesty	The Board of Park Management of Stratford, Ont.	Permission to use the old drill shed site at Stratford, Ont.	Public Park	Twenty-one years	$1 per annum.
" 5, 1911.	J. B. & W. A. Lamb	His Majesty	Lease of premises, Queen Street, Ottawa, Ont.	Inland Revenue Department.	Five years	$2,660 per annum.
" 14, 1911.	Municipalité de Ste-Anne de Bellevue, Que.	"	Lease of one room at Ste. Anne de Bellevue, Que.	For Post Office	One year	$150 per annum.
" 15, 1911.	His Majesty	The Royal Bank of Canada.	Permission to build wall for lighting their building at Campbellton, N.B.		Ten years	$1 forever.
July 1, 1911.	J. C. Keith	His Majesty	Lease of premises No. 78 Lonsdale Avenue, North Vancouver, B.C.	Government purposes	One year	$1,200 per annum.
" 29, 1911.	R. C. Thomas	"	Leàse of one room in Cadogan Block, Calgary, Alta.	Government Inspector	Monthly tenancy.	$35 per month.
Aug. 5, 1911.	F. Edwards	"	Lease of two rooms at North Battleford, Sask.	Immigration purposes	Nine months	$25 per month.
" 15, 1911.	The Ottawa Terminals Ry. Co.	"	Lease of 2nd, 3rd and 4th floors, Central Station, Ottawa. Ont.	For Railway Commissioners.	Five years	$19,500 per annum.
" 18, 1911.	His Majesty	B. F. Dickens	Privilege to dredge gravel at North Arm of Burrard Inlet, B.C.	Private enterprise	Five years	5c. per cubic yard.
" 23, 1911.	"	United Canada Co. Ltd.	Lease of premises No. 548 Sussex Street, Ottawa, Ont.	Private enterprise	Weekly tenancy.	$5 per week.
" 25, 1911.	R. Blackburn	His Majesty	Lease of five rooms, 1st floor of building cor. Sparks and Bank Sts., Ottawa, Ont.	Government purposes	One year	$800 per annum.
Sept. 10, 1911.	Ovide Pelletier	"	Lease of premises at St. Félix de Valois, Que.	Post Office	One year	$100 per annum.
" 14, 1911.	His Majesty	T. T. Dauphine	Permission to dredge gravel, Indian Reserve, Burrard Inlet, B.C.	Private enterprise	Five years	5c. per cubic yard.
" 15, 1911.	The Financier & Artistique Co. Ltd.	His Majesty	Lease of one room, Asbestos, Que.	Post Office	One year	$180 per annum.
" 15, 1911.	Dept. of Railways and Canals	Dept. of Public Works.	Lease of portion of I. C. Ry. wharf, Sydney, N.S.	Immigration shed (1,800 square feet).	During pleasure	
Oct. 2, 1911.	John Curry	His Majesty	Lease of portion of 2nd floor of building, Windsor, Ont.	Public Works Office	Three years	$720 per annum.
" 21, 1911.	Dept. of Railways and Canals	Dept. of Public Works.	Lease of right of way across I. C. Ry. in Cape Breton, N.S.		During pleasure	$1 per annum.
" 21, 1911.	Allan & Fleming	His Majesty	Lease of room in Victoria Chambers, Ottawa, Ont.	Fisheries Commission		$40 per month.
" 23, 1911.	J. D. Chipman	"	Lease of two rooms in premises on King Street, St. Stephen, N.B.	Immigration purposes	Five years	$150 per annum.
Nov. 1, 1911.	Canadian Pacific Ry. Co.	"	Lease of room, Union Bank Building, Saskatoon, Sask.	Telegraph office	Monthly tenancy.	$25 per month.
" 1, 1911.	" " "	"	Lease of a space in C. P. Ry. Co. building, Moosejaw, Sask.	" "	" "	$25 per month.
" 8, 1911.	E. R. McNeill & R. G. Stewart	"	Lease of premises, Queen Street, Ottawa, Ont.	Government purposes	Five years	$1,850 per annum.

No. 3.—STATEMENT of Properties leased to and by the Department of Public Works of Canada, from April, 1911, to March 31, 1912.—*Concluded.*

Date of Lease.	Lessors.	Lessees.	Description of Property.	For what Purpose.	Duration of Lease.	Rental.
Nov. 20, 1911.	Canadian Pacific Ry. Co....	His Majesty...	Lease of room, Postal Station "A," Winnipeg, Man.	Post Office purposes.....	Four years.....	$2,050 per annum.
Dec. 1, 1911.	J. H. Currie.....	"	Lease of building at Vonda, Sask...	Immigration purposes....	Six months.....	$20 per month.
" 6, 1911.	John Kelly.....	"	Lease of ground floor basement Kelly Block, Edmonton, Alta.	Government purposes....	Two years.....	$450 per month.
Jan. 9, 1912.	Alex. Mullin.....	" ...	Lease of premises, cor. Bloor and Markham Streets, Toronto, Ont.	Post Office.....	Five years.....	$1,440 per annum.
" 25, 1912.	His Majesty.....	J. R. Booth....	Lease of hydraulic Lots "B," "C," "D," "E," "F," "G," "H," "I," and "J," Chaudiere Island, Ottawa, Ont.	Private enterprise.....	Twenty-one years.	$100 for each lot.
Feb. 7, 1912.	Charles Brennan.....	His Majesty....	Lease of room No. 214 Trafalgar Building, Ottawa, Ont.	Civil Service Commission.	.....	$182 per annum.
" 27, 1912.	Canadian Pacific Ry. Co.....	" ...	Lease of land at Calgary, Alta...	Site for public building...	(0·45 acre) for fifteen years.	$10 per annum.
Mar. 4, 1912.	Ovide Carrier.....	"	Lease of room at Black Lake, Que...	For Post Office.....	For one year.....	$300 per annum.
" 11, 1912.	A. J. C. McDermott.....	"	Lease of premises at Victoria, B.C..	For Examining Warehouse	Three years.	$450 per month.
" 15, 1912.	R. J. Lang..	" ...	Lease of building at Vegreville, Alta.	Immigration.....	Seven months.....	$40 per month.
" 22, 1912.	His Majesty.....	A. D'Amour....	Lease of premises No. 506 Sussex Street, Ottawa, Ont.	Private enterprise	Monthly tenancy..	$15 per month.
" 27, 1912.	R. L. & R. Blackburn.	His Majesty...	Lease of six floors in Union Bank Building, Ottawa, Ont.	Government offices.....	Five years	$13,000 per annum.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, August 1, 1912.

J. A CHASSÉ,
Law Clerk.

LIST

OF SOME OF THE

ACTS OF PARLIAMENT

PASSED AT THE SESSION OF 1911-12

HAVING REFERENCE TO THE

DEPARTMENT OF PUBLIC WORKS, OR WORKS UNDER ITS CHARGE.

LIST of some of the Public Acts of the Parliament of Canada, passed at the First Session of the Twelfth Parliament, begun and holden at Ottawa, on the fifteenth day of November, 1911, and closed by Prorogation on the First day of April, 1912, and having reference to the Public Works Department or works under its charge—(2, George V.) and Orders of the Governor General in Council, having force of law.

Subject.	Full Title of the Statute.	Chapter.	Page in Statute Book.
Sums granted to His Majesty for the financial year ending 31st March, 1912, and the purposes for which they are granted.	An Act granting to His Majesty certain sums of money for the public service of the financial year ending 31st March, 1912.	1	3
Sums granted to His Majesty for the financial years ending respectively the 31st day of March, 1912, and the 31st day of March, 1913, and the purposes for which they are granted.	An Act for granting to His Majesty certain sums of money for the public service of the financial years ending respectively the 31st day of March, 1912, and the 31st day of March, 1913.	2	43
Confirmation of agreement and payment of subsidy authorized.	An Act to authorize the payment of a subsidy to the Collingwood Shipbuilding Company, Limited.	17	155
Amendment to Dry Docks Subsidies Act, 1910.	An Act to amend the Dry Docks Subsidies Act, 1910.	20	165
Government Works Tolls Act.....	An Act to amend the Government Tolls Act.	26	177

N.B.—By Proclamation dated 24th of February, 1912, the tariff of tolls proposed to be levied by the Rouge Boom Company of Calumet, P.Q., for the use of their works during the season of 1912, was approved.

Vide *Canada Gazette* Vol. XLV., p. 3519.

By Proclamation dated the 29th day of February, 1912, the tariff of tolls proposed to be levied by the Upper Ottawa Improvement Company, Limited, for the use of their works during season of 1912, was approved.

Vide *Canada Gazette* Vol. XLV., p. 3435.

By Proclamation dated the 16th day of March, 1912, the tariff of tolls proposed to be levied by the French River Boom Company, Limited, for the use of their works during the season of 1912, was approved subject to certain condition.

Vide *Canada Gazette,* Vol. XLV., p. 3519.

J. A. CHASSE,
Law Clerk.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, 20th August, 1912.

LARGEST DRY DOCKS AND VESSELS IN THE WORLD

BY

ARTHUR ST. LAURENT, C,E.

Assistant Deputy Minister

OFFICE OF THE ASSISTANT DEPUTY MINISTER,

OTTAWA, May, 1, 1912.

Honourable F. D. MONK, K.C.,
Minister of Public Works of Canada.

SIR,—In accordance with your request, I have the honour to enclose herewith, for your information, a memorandum with tables relating to dry docks and largest vessels of the world.

I have the honour to be, sir,

Your obedient servant,

A. ST. LAURENT,

Assistant Deputy Minister.

April 15, 1912.

Memorandum for the Honourable the Minister of Public Works.

I have the honour to submit, herewith, some information collected from various sources as to dimensions of the largest graving docks and floating dry docks of the world, with cost of construction, whenever it has been possible to obtain it, also the dimensions and draught of the largest existing vessels afloat and under construction or contemplated.

Tables have been prepared as follows:—

Table I.—Largest existing dry docks of the world.
Table II.—Cost of some of the largest dry docks in the world, not including repair plant.
Table III.—Dimensions and approximate estimated cost of some large dry docks under construction or contemplated.
Table IV.—Largest floating docks of the world.
Table V.—Largest dry docks of the Great Lakes.
Table VI.—Largest Canadian dry docks.
Table VII.—Canadian dry docks built under Subsidy Act; also those contemplated for which subsidy has been asked, and their estimated cost.
Table VIII.—Largest merchant ships now built and building.
Table IX.—Largest warships built and building.
Table X.—Largest merchant vessels calling at Canadian ports; also those under construction or contemplated.
Table XI.—Dry dock facilities on Great Lakes and St. Lawrence River.
Table XII.—Largest freight carriers on Great Lakes.

The information is of particular interest at the present time in connection with the development of our national harbours and the necessity of providing adequate facilities to meet the requirements of the larger class of vessels now in commission or building.

To attract trade, in my opinion, and in order to give full confidence to shipping interests, it is not only necessary to have wide and deep channels, good wharfage and shed accommodation, effective equipment for the handling of goods, but it is also necessary to have adequate repairing facilities, and, consequently, dry docks ought to be regarded as an indispensable need in a harbour.

The data gathered, apart from its present general interest, may be of some use in the future, should it be found necessary to amend, from time to time, the dry docks Subsidies Act and enlarge some of its clauses to meet special requirements.

In looking over the list of the largest existing dry docks (Table I), it will be remarked that the prevailing length is generally between 700 and 800 feet. In fact, not many years ago, a dry dock of this length with a width of about 90 feet at the entrance, was considered sufficient to meet all requirements.

During the last ten or twelve years, however, vessels have been built either of the commercial or warship types, of a larger size than can possibly be accommodated by most of the existing large dry docks; and the inadequacy of these dry docks is immediately apparent if we consider that ships are contemplated for the near future of 900 to 1,000 feet in length, 100 feet beam and 36 to 40 feet draught.

On this account, all the leading ports of the world are agitating for larger dry docks.

Great Britain, though well provided with accommodation for the dry docking of large vessels, is contemplating or has under construction, longer and wider docks. Amongst others, appear two large floating dry docks of 32,000 tons capacity each. These docks are being built by the Admiralty in addition to the 32 graving docks already owned by the Government.

The number of graving docks owned in Great Britain by shipbuilding concerns or by port authorities is placed at about 240, besides 13 floating docks in use, and 124 slipways mostly used for small vessels. Out of the 240 docks mentioned, 165 are 300 feet and over in length.

There are several of these docks over 800 or 900 feet in length, the largest being the new dock at Liverpool, 1,000 feet in length, 110 in width at entrance and 34 feet of water on sill.

Another dry dock is proposed at Liverpool, 1,020 feet in length, 120 in width at entrance and 42 feet on sill.

France has few existing graving docks over 700 feet in length, the entrance width varying from 87 to 114 feet and the depth from 28 to 39 feet. A few large ones, however, are under construction; whilst among those contemplated are two at Toulon 1,450 feet each in length, 118 feet width at entrance, and 39·4 feet depth on sill, and one at Havre 1,023 feet long, with provision for future lengthening to 1,640 feet, the entrance width to be 124·7 feet and 42·6 depth on sill. It can be seen that France is alive to the necessity of providing larger dry docks.

Germany shows the same spirit, but her efforts seem to be directed more towards the construction of large floating docks than masonry docks. In this, she differs from Great Britain, France and the United States. These countries have relatively few floating docks capable of accommodating large vessels as compared with their masonry docks; whilst Germany has a number of steel floating docks ranging from 10,000 tons to 45,000 lifting capacity. Her largest masonry dry dock seems to be at Bremenhaven, the dimensions being 853 feet in length, 113·2 feet entrance width and 38 feet depth over sill.

The largest dry docks of Italy are about 700 feet in length with entrance widths varying from 105 to 120 feet and depth of 33 to 40 feet.

In the United States, there are about 60 graving docks, masonry and timber, 79 floating docks and over 80 marine railways used for repairing ships.

Most of the floating docks are small, being generally of about 1,000 tons capacity. The largest is the 'Dewey' of 18,500 to 20,000 tons lifting power.

There are several large commercial graving docks, of which the largest, the Newport dry dock No. 2, is 804 feet in length, 87 feet clear width and 39 feet of water over sill at mean high water.

The United States Government owns quite a number of naval docks also employed for docking merchant vessels, several of which are over 700 feet in length.

The largest at present is the Puget Sound Dock No. 2, not yet quite completed, which is 827·6 feet in length, 123·9 feet width at entrance and 38 feet depth at M.H.W.

At Pearl Harbour, however, it is intended to extend a dock, originally intended to be 791·6 feet long, to 1,000 feet.

On the Great Lakes, the largest dry dock is at Lorain, Ohio, having dimensions of 724 feet in length, 77 feet in width at entrance and 15 feet in depth over sill at M.H.W.

In Canada (see Table V) the largest dry docks are the Lévis and Halifax docks. The Lévis graving dock is 600 feet in length, but only 62 feet clear width at entrance, which is too narrow for quite a number of vessels navigating the St. Lawrence river. The Halifax Dock, though only 570 feet in length is of greater utility than the Lévis dock on account of its width at the entrance, which is 85 feet.

It may be interesting to compare the conditions at New York and Boston with those at Montreal, Quebec, St. John and Halifax, in relation to docking and repairing facilities at these ports, considering the rapid increase in number and dimensions of passenger and freight vessels.

New York, including Brooklyn and Hoboken Yards, has five large dry docks, three of which are owned by the United States Government, 40 floating docks of 200 tons to 1,500 tons lifting capacity, and 9 marine railways of 150 to 4,000 tons capacity.

At Boston, there are five large dry docks, two of which are owned by the Government, and five marine railways, varying in capacity from 300 to 2,000 tons.

Montreal has two small dry docks, to which is to be added soon, a large floating dock now under construction.

At Quebec, we find one Government dry dock, 3 small floating docks, one patent slip, two gridirons, all on the Lévis side of the St. Lawrence river. A large dry dock is projected.

Halifax has one Government dry dock and 4 patent slips of 150 to 3,000 tons capacity.

St. John has 3 gridirons; a large dry dock is also proposed.

The above information is enough to show how far behind are our Canadian ocean ports, on the Atlantic, as compared with New York and Boston in regard to ship repairing facilities.

Considering the rapid development of our trade, and the increasing number of large vessels, calling at Canadian ports, the inadequacy of the dry dock and repair equipment is emphasized to a large extent.

Even New York, with her great facilities, has not kept pace in this regard with the large class of vessels built recently which may require accommodation.

Under existing conditions, there are 17 transatlantic steamers calling at New York that could not be dry-docked anywhere in the United States, and 35 steamers that could not be dry-docked in the port of New York, besides the large ships now building as given in tables Nos. VIII and IX.

On the St. Lawrence, there are at present at least 25 vessels visiting Quebec and Montreal that could not be dry-docked at any of these ports in case of accident.

Larger ships are under construction or projected for the St. Lawrence river route, and for other principal Canadian ocean ports.

New York and other American ports have under consideration the providing of facilities for the largest ships now building. Canada cannot remain behind, and adequate facilities for repairs are one of the factors that must not be neglected in equipping a port and must be kept ahead of immediate requirements

The Dry Dock Subsidies Act passed in 1910 and amended in 1912 will be a great help in that direction.

Already several applications have been granted or are under consideration as may be seen by Table No. VII.

A perusal of Tables Nos. VIII and IX, giving the dimensions of the largest existing warships and commercial vessels, and those under construction or contemplated, will show that the minimum dimensions mentioned in the Dry Docks Subsidies Act for first-class docks are not too great.

Docks 900 feet long, still better 1,000 and 1,150 feet, will at some future date be required for our principal ports, the longest being constructed with a view to docking one or more vessels at the same time.

As to width at entrance, it should not be less than 100 feet for first-class docks, and better 110 feet as provided for by the Amended Act of 1912. Vessels have almost reached a beam of 100 feet and in docking them, with a possible list of a few feet, as may happen, it can be seen that a margin of a few feet is necessary and a very wide entrance is of great importance.

In some cases, within the next 10 or 15 years, it may be necessary to have docks even with 120 feet clear width at entrance.

As to the draught of vessels, in studying the lists of the largest boats built and under construction (Table Nos. VIII and IX), it appears that this is not increasing in proportion to the length and beam. In some cases the ratio has decreased for some of the largest ships. A depth over the sill of 35 to 40 feet appears therefore to cover amply future requirements.

Respectfully submitted,

A. ST. LAURENT,

Assistant Deputy Minister.

TABLE I.—Largest existing docks of the world.

Locality.	Length.	Width at Entrance.	Depth on Sill H.W.O.S.T.
	Feet.	Feet.	Feet.
GREAT BRITAIN			
Belfast—			
Alexander Dry Dock	825	80	25·9
New Dry Dock	887	96	35
Bristol—			
Avonmouth Graving Dock	914	100	34
Glasgow—			
Clyde Navigation Trust Dock No. 3	880	83	26·6
Liverpool—			
Canada Graving Dock	925½	94	31·10
New Dock	1,000	110	34
Herculaneum No. 2	930	60	22·10
Brocklehand Dock	804	96	32
Tranmere Graving No. 2	900	95	33
London—			
Tilbury Dry Dock No. 1	846	70	35
Newcastle-on-Tyne—			
Hepburn Graving Dock	711	90	28·6
Newport—			
Channel Dry Dock	770	65	28·6
Portsmouth—			
Dry Dock No. 156	612	94	33·10
Southampton—			
Dry Dock No. 6	875	90	33
Gibraltar	863	95	38·5
FRANCE.			
Bayonne—			
Dry Dock	594	108	33
Brest—			
Dry Docks Nos. 7 and 8—can be used as one dock	765	87 & 66	35·5
Calais—			
Government Dry Dock	508·6	69	28·8
Cherbourg—			
Dry Dock No. 6	606	69·5	29·6
Havre—			
Dry Dock de l'Eure No. 4	674	98	28·6
Lorient—			
Government Dry Dock No. 2	608·6	86·6	29·4
Marseilles—			
Dry Dock No. 1	595	61	23
St. Nazaire—			
Dry Dock No. 1	738	114	39
Toulon—			
Dry Dock No. 3	600	82	34
UNITED STATES—LARGEST NAVAL DRY DOCKS.			
Boston—			
Dry Dock No. 2—Granite and concrete, completed, 1905	738	101·8	30·2
Charleston, S.C.—			
Dry Dock No. 1—Concrete and granite	566·7	113	34·2
Mare Island, Cal.—			
Dry Dock No. 1—Completed, 1891, granite and concrete	508	80·7	26·3
Dry Dock No. 2—Completed, 1910—Concrete	740·5	102	30·4
New York—			
Dry Dock No. 3 (1897), timber and concrete	656	105 top 71 bot.	29·8
Dry Dock No. 4—not finished, commenced 1905	694·6	120·3	35·5

TABLE I—Largest existing docks of the world.—*Concluded.*

Locality.	Length.	Width at Entrance.	Depth on Sill M. H. W.
UNITED STATES—LARGEST NAVAL DRY DOCKS—*Continued.*	Feet.	Feet.	Feet.
Norfolk, Va.—			
Dry Dock No. 3 (1908 extended 1910) concrete and granite.....	722·11	112·5½	34
Pearl Harbour, Hawaii—			
Dry Dock No. 1—Concrete, not finished, commenced 1909. Proposed to extend to 1,050 ft. in length to take ship at least 1,000 ft.	791·6	123	34·9
Philadelphia, Pa.—			
Dry Dock No. 2—Concrete on piles, (1908)	744·6	102·7	30
Portsmouth, N.H—			
Dry Dock No. 2—Concrete and granite, 1906.....	740·11	101·9	30·3
Puget Sound, Wash.—			
Dry Dock No. 1—Wood body with masonry entrance, 1896.....	637	92·8	29·10
Dry Dock No. 2—Concrete and granite, commenced 1908, unfinished.....	827·6	123·9	38
UNITED STATES—LARGEST EXISTING COMMERCIAL DOCKS.			
Newport—			
Dry Dock No. 2	804	87	30
Baltimore—			
Dry Dock.....	600	64	22·5
San Francisco—			
Dry Dock No. 2.....	730	88	30·5
Lorain, Ohio—			
Dry Dock (largest on Great Lakes)	724	77	15
GERMANY.			
Kiel—			
Dry Dock, No. 6.....	590	98	38
Bremenhaven—			
Kaiser Dry Dock..	754·6	98·3	35·3
New Dry Dock.	853	113·2	37·11
Wilhelmshaven—			
Dry Docks, Nos. 4, 5 and 6 each	630	103·6	32·9
ITALY.			
Spezzia—			
Dry Dock, No. 5.....	702	105·6	33
Taranto—			
Government Dry Dock.....	700	108	32·9
New Dock.	700	106	40
Venice—			
New Dock...	700	120	39
RUSSIA.			
Libau—			
Dry Docks, Nos. 1 and 2 each	670	85	30
Sevastopol—			
Alexandrowsky Dry Dock.....	620	85	32
St. Petersburgh—			
Peter Dock.....	1,058	62·9	19·6
Alexander Dock..	594	85·6	28
New Dock.....	700	98·6	36
Vladivostock—			
Dry Dock, No. 2.....	635	105	32·6

TABLE II.—Cost of some of the largest dry docks in the world.

Designation of Docks.	Dimension of Vessels which can be Docked.				Cost.
	Length.	Breadth.	Draught.	Tonnage.	
	Feet.	Feet.	Feet.		$
Great Britain—					
Liverpool	984·3	114·10	28′3″	60,000	2,553,750
Belfast	820	91·10	31′6″	36,400	1,787,625
Melbourne (Colony)	764·5	100	32′6″	40,000	2,000,000
Germany—					
Wilhelmshaven	613·6	100·5	36·1	32,500	1,650,750
Bremenhaven I	718·6	80·9	33·8	21,400	976,000
" II	836·8	113·2	36·3	55,000	1,930,875
United States—					
Boston No. 2	719	90	30	.....	1,160,000
Charleston	544	101	34	.....	1,250,000
Mare Island No. 1	455	56	26·3	.....	2,772,332
Mare Island No. 2	719	88·2	30	.....	1,679,655
New York No. 3	612	72·4	27	Timber & Concrete.	554,708
New York No. 4,	681·6	110·6	32·5	.....	2,444,770
Norfolk No. 3	713·0	101·4	31	.....	1,729,000
Pearl Harbour No. 1	781·6	113	31·8	To be extended to 1050 ft.	2,565,086
Philadelphia No. 2	721	90	29	.....	1,471,550
Portsmouth No. 2	720	88	30	28,000	1,179,000
Puget Sound No. 2	800	113	35	39,600	2,415,000
League Island No. 2	731·7	86	30·2	28,000	1,365,000
Belgium—					
Antwerp	689	78·9	26·3	22,400	1,012,500

TABLE III.—Dimensions and approximate estimated cost of some large dry docks contemplated or under construction.

Designation of Dock.	Commenced.	Usable Length.	Entrance Width.	Depth on Sill O.H.W.S.T.	Probable Cost.
	Year.	Feet.	Feet.	Feet.	$
Great Britain—					
Liverpool (Gladstone)	Proposed	1,020	120	42	2,500,000
Portsmouth No. 4 Lock and Dock		900	100	35	4,500,000
Leith		550	70	23	485,000
Singapore (Colony) Contract let		852	100	34	1,940,000
Melbourne (Colony)	Proposed	800	110	34	1,860,000
France—					
Cherbourg (Warships)	1910	780	118	27	1,100,000
Brest. 2 combined	1910	656	108	26·3(each)	1,300,000
Brest	1910	800	95	37	
Toulon (Warships)	Proposed	1,450	118	39·4	
Marseilles	1910	660	82	29·6	600,000
Havre. 1023—Future extension to		1,640	124·7	42·6	5,800,000
Havre	Proposed	985	115	27	
Belgium—					
Antwerp	1910	721	85	27	
United States—					
Brooklyn, No. 4	1905	700	110	35	2,900,000
Chili—					
Talcahuano—Bids called for		585	116	36	2,800,000

Note:—

The cost given for docks at Cherbourg, Brest and Marseilles are for the docks only and do not include the roller gate nor the pumping plant. The costs for other docks are assumed to be for the docks complete.

TABLE IV.—Largest floating docks of the world.

Location.	Date of Construction.	Length.	Width.	Depth.	Capacity.	Cost.
						$
Hamburg					11,500	
"	1897				17,000	
"	1903				18,000	
"		721	108·3	32.9	25,000	
"					35,000 to 45,000	
Stettin	1898				11,000	
Kiel		656	147·6	45	40,000	1,904,000
Flensburg		605	89	25	18,000	
"					35,500	
Bremen		485	85·3	23	11,700	320,000
Antwerp					11,000	
Rotterdam	1904				15,000	
Algiers	1902	525	100	30	18,000	809,713
Baltimore					12,000	
Hoboken	1900				10,000	
Port Mahon	1901				13,000	
New York	1901				12,000	
New Orleans	1901				18,000	
Bermuda	1902	545	100	32	17,000	
Pala	1903				15,000	
"Dewey"	1905				20,000	1,143,959
Cavite		500	100	30		
Hâvre (Proposed)		970	147·7	45	100,000	
Austria (Govt.)	Under construction.	585	111·4	37	22,700	1,600,000
England—Admiralty—2 under construction		1,020	120	35	32,000	Each at 2½ millions.

TABLE V.—Largest dry docks on the Great Lakes.

Designation of Dock.	Usable Length.	Entrance Width.	Depth on Sill.
	Ft.	Ft.	Ft.
United States—			
Lorain, Ohio	724	77	15
Superior, Wis., No. 2	605	66·6	19
Buffalo, N.Y., No. 2	610	72	16
Toledo, Ohio	640	78	14.6
Canada—			
Port Arthur, Ont	679	77	16
Collingwood, Ont	515	54Bto.	15·6

TABLE VI.—Largest Canadian dry docks.

Halifax, N. S	570	85	30
Quebec, P.Q	600	62	25
Esquimalt, B.C	430	65	26½
Collingwood, Ont	515	54	.....
"	570	90	20
Port Arthur, Ont	679	77	16
Kingston, (Gov't.)	290	55	18

TABLE VII.—Canadian dry docks built and applied for under Subsidy Act.

Location.	Capacity length.	Breadth at entrance.	Depth over sill.	Estimated cost of dock.	Estimated cost of repairing plant.	Total estimated cost.	Name of Company.
				$	$	$	
Collingwood	350	55	16½	375,000	125,000	500,000	Collingwood Ship Building Co. Ltd.; built; 3% for 20 years, $15,000 per annum.
" No. 2	420	95	16	.....	.....	306,965	Collingwood Ship Building Co. Ltd.; built; 3% for 20 years, $9,208.96 per annum.
Port Arthur	700	60	15	610,000	648,050	1,258,050	Western Dry Dock Ship Building Co. Ltd.; 3% for 20 years; built; $37,741.50 per annum.
Montreal	600	100	27½	2,000,000	1,000,000	3,000,000	Canadian Vickers Limited; floating dock, 25,000 tons; building; 3½% for 35 years, $105,000 per annum; cost of floating dock proper, $1,775,000.
Prince Rupert	600	100	25	1,605,770	593,398	2,199,168	Grand Trunk Pac. Rly. Co.; floating dock, 20,000 tons; building; 3½% for 25 years, $76,970.88 per annum; cost of floating dock proper, $754,425.
Vancouver	550	85	27	1,050,000	164,000	1,214,154	The Vancouver Dry Dock Ship Building Co. Ltd.; floating dock, 15,000 tons; no work done; 3½% for 25 years, $42,495.39 per annum; cost of floating dock proper, $1,050,000.
quimalt	900	121¾	35	2,029,374	608,427	2,637,801	B. C. Maritime Rly. Co. Ltd.; Order in Council passed; no contract yet; no work done; 3½% for 35 years, $92,323.04 per annum.
Sault Ste. Marie	650	85	18½	600,000	300,000	900,000	The Sault Ste. Marie Dry Dock and Ship Building Co. Ltd.; Order in Council passed; no contract yet; no work done; 3% for 20 years, $27,028.08 per annum.
Toronto	300	80	15	534,121	360,000	894,121	The Polson Iron Works Limited; floating dock, 5,400 tons; contract signed; 3% for 20 years, $26,823.63 per annum; cost of floating dock proper, $256,560.
Owen Sound	600	86	20	650,000	606,892	1,500,000	Burnard Geen Graving Dock; Order in Council passed; no contract; 3,500 tons capacity.
"	350	65	18	243,108			Burnard Geen Floating Dock; cost of floating dock proper, $243,108.
St. John, N.B.	.....						Proposed; no plans submitted yet.
Sydney, N.S.	.....						The British Canadian Ship Building and Dry Dock Co. Order in Council passed, accepting application; plans yet incomplete; matter stands.
Halifax, N.S.	.....						Extension projected.
Lévis or Quebec	.....						No plans submitted yet; proposals called for.

TABLE VIII.—List of largest merchant vessels afloat and under construction.

No.	Name of Vessel.	Company.	Gross Tonnage.	Length between perpendiculars.	Beam.	Relative beam. (*)	Draught	Relative draught. (†)	Speed in knots.	Date of building.
1	Europa or Imperator	Hamburg-American	50,000	879·04	98·07	0·364	35·10	0·128	22 to 23	Under construc'n
2	Aquitania	Cunard	50,000	843·19 to 899·74	95·38	0·348 to 0·367	35·00	0·124 to 0·134	23	"
3	Olympic	White Star	45,000	852·17	92·73	0·354	34·57	0·131	22	1910-11
4	Titanic (foundered at sea)	"	45,000	852·17	92·73	0·354	34·57	0·131	22	1910-11
5	Mauritania	Cunard	31,937	759·78	88·00	0·364	35·23	0·151	25½	1907
6	Lusitania	"	31,350	759·78	88·00	0·364	35·23	0·151	25½	1907
7	Oceanic	White Star	26,100	684·80	68·39	0·325	35·56	0·167	20	1899
8	George Washington	Nordeutscher Lloyd	25,570	722·25	78·00	0·351	34·00	0·154	19	1908
9	Kaiserin Augusta Victoria	Hamburg-American	24,581	677·22	77·21	0·374	40·70	0·197	18	1905
10	Rotterdam	Holland American	24,170	650·23	77·31	0·386	32·24	0·161	.....	1908
11	Adriatic	White Star	23,800	708·81	75·40	0·348	37·33	0·171	17½	1906
12	Baltic	"	23,800	708·81	75·31	0·354	37·23	0·171	17	1908
13	Amerika	Hamburg-American	22,622	668·82	74·23	0·361	39·46	0·171	18	1905
14	Cedric	White Star	20,904	680·70	75·31	0·361	36·77	0·177	16½	1901–02
15	Celtic	"	20,904	680·37	75·31	0·361	36·77	0·177	16½	1901–02
16	Minnesota	Great Northern	20,718	621·82	73·41	0·386	37·16	0·194	.....	1904
17	Caronia	Cunard	19,687	649·83	72·13	0·361	32·00	0·161	18	1905
18	Carmania	"	19,687	649·83	72·13	0·361	32·00	0·161	18	1905
19	Kronprinzessin Cecilie	Nordeutscher Lloyd	19,503	706·31	72·13	0·334	31·50	0·144	24	1906
20	Kaiser Wilhelm II	"	19,361	706·31	72·13	0·334	31·50	0·144	23¾	1902
			28,243	724·50	79·67	0·358	35·10	0·157	.....	.....

(*) We designate under the terms "relative beam" and "relative draught" the respective proportions of the beam and draught to the length between the perpendiculars.

(†) It should be remarked that the vessels of certain lines of navigation never reach or leave the fixed harbours with their maximum draught either because they do not carry their full complement of coal or on account of the class of traffic they carry.

Extract from report by H. Vander Vin, Chief Engineer, Antwerp. Meters reduced to feet.

TABLE IX.—Largest warships built and building, taken from Jane's fighting ships, 1910.

Date of Completion.	Name.	Tonnage.	Dimensions.	Draught	Country.
1911	Indefatigable	19,200	580 x 79½	27½	Great Britain.
1906	Dreadnought	18,000	526 x 82	31	"
1912	Queen Mary	27,000		28	"
1911	Lion	26,400	656 x 86½	27½	"
Building	Texas	27,000			United States.
"	Wyoming	26,000	554 x 93	29	"
1911	Utah	21,825	521 x 88½	28½	"
Building	Oldenburg	27,000			Germany.
1911	Ostfriesland	22,000	490 x 97	25½	"
1911	Moltke	22,500	590 x —	26	"
1911	Danton	18,400	480 x 84¾	27½	France.
Building	Courbet	23,400	541 x 88½	29½	"
1912	Setsu	20,800	481 x 86	28¼	Japan.
Building	Kongo	27,500			"
"	Giulio-Cesare	21,500	530 x —	28	Italy.
"	Gangut	24,000	590½ x 87	27¼	Russia.
"	Moreno	27,000	557 x 92	27	Argentine Republic.
"	Rio de Janiero	19,300	530 x 83	28	Brazil.

TABLE X.—Largest vessels operating on the St. Lawrence route; also those building for this route.

Date of Building.	Names.	Gross Tonnage	Dimensions.	Draught.	Speed.	Owners.
Building	Alsatian	17,000	570 x 72 x 45½	28½	19	Allan Line.
"	Calgarian	18,000	600 x	29	20	
"	Albynian	17,000	570 x 72 x 45½	28½	19	"
1904	Victorian	12,000	520 x 60 x 38	27½	18	"
1905	Virginian	12,000	520 x 60 x 38	27½	18	"
1907	Corsican	12,000	500 x 61 x 38	26	16	"
1900	Tunisian	11,000	500½ x 59 x 39¾	26	15	"
1909	Megantic	14,892	550 x 67 x 32¾	27	18	White Star.
1908	Laurentic	14,892	550 x 67 x 32¾	27	18	"
1889	Teutonic	9,984	555 x 57 x 39	28	19	"
1906	Empress of Britain	14,189	548¾ x 65½ x 36½		20	C.P.R.
1906	Empress of Ireland	14,191	548¾ x 65½ x 36½		20	"
1908	Royal Edward	10,800	526 x 60 x 30½		20½	Canadian Northern.
1907	Royal George	10,800	526 x 62 x 26¾		20½	"
Building	Andania	13,000	520 x 63¾ x 46		15	Cunard.
"	Alaunia	13,000	520 x 63¾ x 46		15	"

TABLE XI.—List of dry docking facilities on the Great Lakes and St. Lawrence River.

No.	Location.	Name of Dock.	Length.		Width.			Depth on sill.	Remarks.
			On blocks	Over all.	Bottom.	Top.	Entrance.		
			Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	
1	Quebec, Que	Davy's Floating Dock No. 1	234	236	.....	.....	41	12	
2	"	" " No. 2	178	180	.....	.....	39	12	
3	"	Lorne Dry Dock (Govt.)	600	640	.....	...	62	25	
4	"	Russell's Floating Dock	225	228	.....	.....	41½	14½	
5	Montreal, Que	Cantin's Dock No. 1	215	215	...	.....	45	10'6	Two can be put in one 415 feet long.
6	"	" No. 2	200	200	..	.....	.....	.....	
7	Ogdensburg, N.Y.	St. Lawrence Marine Ry. Co	280	300	.....	52	16	.....	
8	Kingston, Ont.	Government Dry Dock	280	290	.....	79	57	16–18	Can be lengthened to 323 feet.
9	"	Davis Dry Dock Co	.....	182	.....	50	31	8	
10	Oswego, N.Y.	Ontario Dry Dock	155	166	36	50	10	.. ..	
11	Picton, Ont.		175	.....	.....	.. .	38	12 forw'd 19 aft	Marine Railway.
12	Toronto, Ont.	P. Arnot Marine Ry. Dry Dock	125	200	32	32	32	10'6	For small craft principally
13	Port Dalhousie, Ont.	Muir Brothers	255	300	.....	120	16	11	Three sections.
14	North Tonawanda, N.Y.	R. I. Rose	.....	.....	.....	...	.....	.....	Incline for Canal boats.
15	Buffalo, N.Y.	Buffalo Dry Dock Co. No. 1	454	478	45	81½	58½	16	
16	"	" " No. 2	610	615	72	96	72	16	
17	"	" " No. 3	372	379	48	65	45	15	
18	"	Empire Shipbuilding Co	130	130	36	40	.. . .	13	Floating dock.
19	"	" "	90	100	26	30	.....	9	"
20	Cleveland, O.	American Shipbdg. Co. No. 1	430	450	.....	55	50	16	
21	"	" " No. 2	550	600	.....	115	70	19	
22	"	" " No. 3	340	360	.....	55	50	20	
23	Lorain, O.	American Shipbdg. Co. No. 1	500	559	.....	101	60	18	
24	"	" " No. 2	732	764	85	125	80	15½	
25	Sandusky, O.	Lake Erie Dry Dock & Mill Co.	(Cradle 134 feet)	.....	.....	.....	.....	8	Marine Railway.
26	Toledo, O.	A. Gilmores' Sons	230	240	...	55	37	9	
27	"	The Toledo Shipbdg. Co. No. 1	640	674	78	96	94	14½	At 572 ft. datum.
28	"	" " No. 2	525	550	72½	103	80½	13	" "
29	"	" Marine Railway	....	100	.....	.....	.....	10½	Width 30 ft.
30	Detroit, Mich.	Great Lakes Engineering Works.	.....	600	.....	95	.....	18	Floating dock.
31	"	Detroit Shipbdg. Co. (Orleans St.)	368	387	...	90	78	16	
32	"	Detroit Shipbuilding Co. (Orleans St.)	245	245	....	48	48	8	
33	"	W. H. Odes (Dubois St.)	186	186	.....	.....	36	13½ aft	5 ft. forward, Marine Ry.

34	Port Huron, Mich	Port Huron Ship Bdg. Co.	390	412	.....	95	62	18		
35	Bay City, Mich	Bay City Dry Dock	306	316	42	62	.....	13½		
36	"	James Davidson	400	435	60	100	.....	14½		
37	Owen Sound, Ont	B. N. A. Bent Chair Factory	.....	300	55	.....	.....	10		
38	Collingwood, Ont	Collingwood Shipbdg. Co., Ltd	513	517	60	78	60	16½		
39	Chicago, Ills	Ship Owners Dry Dock Co	....	310	50	.....	.....	14		
40	"	" "	.....	500	80	.....	.....	15		
41	"	" "	.....	260	40	.....	.....	9		
42	South Chicago, Ills	Chicago Shipbuilding Co	556	564	70	100	.....	16		
43	Milwaukee	Milwaukee Dry Dock Co	....	450	40	71	.....	13½	Also two floating docks with lengths of 130 and 90 feet.	
44	"	" " South Yard	.....	.....	.....	.....	.....	.....		
45	"	" " West Yard	312	312	47	73	.....	13½	Also floating dock of 200 feet.	
46	Manitowoc	Manitowoc Dry Dock Co	340	350	44	60	.....	12½	Floating dock of 350 tons.	
47	Sturgeon Bay, Wis	Riebolt Welter & Co	225	...	40	.....	.....	13½	Floating dock.	
48	"	" "	150	.....	.....	.....	.....	12½		
49	Sault Ste. Marie, Wis	Hickler Bros. Marine Ry	190	....	.....	42	.....	14½	8 ft. forward end. Capacity 1,000 tons.	
50	Houghton, Mich	Joseph Croze	75	100	23	26	26	10		
51	Superior, Wis	Superior Shipbuilding Co. No. 1	562	591	.....	84	64	14		
52	"	" " No. 2	605	620	.....	106	66½	19		
53	Duluth, Minn	Great Lakes Dredge & Dock Co	.....	95	54½	.....	.....	12	Floating dock.	
54	"	Peter Grignon	.....	60	57½	.....	.....	12	"	
55	Port Arthur, Ont	Western Dry Dock & Shipbdg. Co	679	736	72	98	77	16		
56	"	Canadian Towing & Wrecking Co	.....	100	58	.....	.....	15	"	

TABLE XII.—Largest freight carriers on the Great Lakes.

Vessels.	Length.	Beam.	Max. Draught.	Reg. Tonnage.	Remarks.
	Ft.	Ft. In.	Ft. In.		
Schoonmaker	617	64	23		Building.
Shenango	607	58 2	20 5	6498	
W. B. Dickson	607	58 2	20 5	5712	
W. P. Palmer	607	58 2	20 5	5746	
Geo. G. Crawford	605	60		6196	
W. J. Filbert	605	60		6189	
Francis B. House	605	60 2		5943	
Thos. F. Cole	605	58	19	5484	
E. Y. Townsend	602	58	19	5673	
W. L. King	602	58	19	5712	
W. J. Morrell	602	58	19	5419	
J. P. Morgan	600	58	19	5530	
E. J. Buffington	600	58	19	5839	
Thos. Lynch	600	58	19	5450	
Geo. F. Baker	600	58		5459	
J. P. Morgan, Jr.	600	58		5824	
A. C. Dinkey	600	58		5822	
Henry Phipps	600	58		5450	
Norman B. Ream	600	58		5444	
H. H. Rodgers	600	58		5444	
Wm. B. Schiller	600	58		5819	
Thos. Waters	600	58		5873	
Samuel Mather	552	60 2		5408	
H. K. Oates	569	56	18 6		
G. A. Tomilson	557	58	18 6		
City of Detroit III	485	100			Passenger steamer, Side wheeler.

9-10 EDWARD VII.

CHAP. 17.

An Act to encourage the construction of Dry Docks.

[*Assented to 4th May, 1910.*]

HIS MAJESTY, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. This Act may be cited as *The Dry Docks Subsidies Act, 1910.*

2. In this Act, unless the context otherwise requires, 'Minister' means the Minister of Public Works, and 'dry dock' and 'dock' include floating dry docks.

3. The Governor in Council may, as an aid to the construction of any dry dock, authorize the payment out of any unappropriated money forming part of the Consolidated Revenue Fund of Canada of a subsidy, in accordance with the provisions of this Act, to any incorporated company, approved by the Governor in Council as having the ability to perform the work, which shall enter into an agreement with His Majesty to construct a dry dock under the provisions of this Act, with all necessary equipment, machinery and plant, for the reception and repairing of vessels.

(2) No such aid shall be granted unless the Governor in Council is satisfied, upon a report of the Minister, based upon a report of the Chief Engineer of the Department of Public Works, and such other evidence as he deems necessary, that such dry dock is needed in the public interest, and is, as proposed, of sufficient capacity to meet the public requirements where such dry dock is to be located.

4. For the purpose of constructing a dry dock under the provisions of this Act, the company entering into the agreement contemplated by the next preceding section may utilize, or acquire for the purpose of utilizing, the works and property of any existing dry dock company whose dock has been constructed under the provisions of chapter 17 of the statutes of 1882, chapter 9 of the statutes of 1899, chapter 116 of the Revised Statutes, 1906, or chapter 24 of the statutes of 1908, and the value of such works and property at the time when the agreement is entered into, so far as such works and property may be useful in the construction of a dry dock of greater dimensions or capacity under this Act, shall be deemed to be for the purposes of subsidy calculation a part of the cost of the dry dock constructed under this Act.

(2) The aggregate amount of all subsidies paid by the Governor in Council, in respect of the dock so utilized, under any of the said chapters 17, 9, 116 or 24, before the agreement to construct under the provisions of this Act is entered into, shall be deducted from the subsidy payable under this Act, and such deduction shall be made in equal annual portions during the period in respect of which subsidy is payable under this Act; and the remaining payments (if any) of subsidy called for by the agreement entered into under any of the said chapters shall not be made.

(3) For the purposes of this section, the value of the works and property of any existing dry dock company shall be estimated by the Minister, based upon a report of the Chief Engineer of the Department of Public Works; and the Governor in Council, having regard to such estimate, shall determine the value of such works and property, and such amount shall be so determined before the said agreement is entered into.

5. Any company which seeks to enter into an agreement with His Majesty to construct a dry dock under this Act shall, as part of its application therefor, present

detailed working plans and specifications of the proposed works, accompanied by estimates of the cost thereof, including estimates of the cost of all necessary equipment, machinery, plant and site (provided the company is obliged to pay for the site in cash and does not obtain or has not obtained a site by way of bonus or gift), and such estimates of cost shall be in such detail as shall enable the Chief Engineer of the Department of Public Works to verify the same for the purposes of the report required to be made by him under section 8 of this Act.

6. If the company, after it has entered into an agreement with His Majesty to construct a dry dock under this Act, is unable to agree with the owner of any lands or immovable property, or interest therein, (which land or immovable property or interest is deemed by the company necessary for a site for such dry dock,) as to the purchase, acquisition or transfer thereof, or the price to be paid therefor, the company may, upon the approval of the Governor in Council, acquire such lands or immovable property or interest without the consent of the owner, and shall in such cases, for all purposes of the taking, acquiring, ascertaining the value of and making compensation for the said lands or immovable property or interest, have all the powers of a railway company under *The Railway Act* relative to the taking and using of lands, and the compensation and damages therefor, and *The Railway Act* shall, *mutatis mutandis* and in so far as applicable, apply to the taking and acquiring of, and the ascertaining and payment of the compensation and damages for, such lands, immovable property or interest by the company.

7. Dry docks constructed under the provisions of this Act shall, for the purposes of this Act, be divided into three classes, as follows:—

(1) Dry docks of the first-class, for naval and general purposes costing for the purposes of subsidy calculation not more than four million dollars; being,—

(*a*) dry docks, other than floating dry docks, of dimensions when completed not less than the principal dimensions next hereinafter mentioned, that is to say, clear length on bottom from caisson groove or hollow-quoin to head, nine hundred feet, clear width of entrance one hundred feet, depth of water over the sill, at high water ordinary spring tides, thirty-five feet; and,

(*b*) floating dry docks, of a lifting capacity of at least twenty-five thousand tons, in which vessels can with ease and safety be received and repaired;—

provided, however, that any dry dock shall not, for the purposes of this Act, be deemed to be a dry dock of the first class unless there can be received and repaired therein with ease and safety the largest ships or vessels of the British Navy existing at the time at which the contract is entered into;

(2) Dry docks of the second class, costing for the purposes of subsidy calculation not more than two and one half million dollars; being—

(*a*) dry docks, other than floating dry docks, of dimensions when completed not less than the principal dimensions next hereinafter mentioned, that is to say, clear length on bottom from caisson groove or hollow-quoin to head, six hundred and fifty feet, clear width of entrance, eighty-five feet, depth of water over the sill at high water ordinary spring tides, thirty feet if constructed on tidal waters and twenty-five feet over the sill at ordinary low water if constructed on non-tidal waters; and,

(*b*) floating dry docks of a lifting capacity of at least fifteen thousand tons, and in which vessels can with ease and safety be received and repaired;

(3) Dry docks of the third class, costing for the purposes of subsidy calculation not more than one and one half million dollars; being,—

(*a*) dry docks, other than floating dry docks, of dimensions when completed not less than the principal dimensions next hereinafter mentioned, that is to say, clear length on bottom from caisson groove or hollow-quoin to head, four

hundred feet, clear width of entrance, sixty-five feet, depth of water over the sill at high water ordinary spring tides, twenty-two feet if constructed on tidal waters and eighteen feet over the sill at ordinary low water if constructed on non-tidal waters; and,

(*b*) floating dry docks of a lifting capacity of at least three thousand five hundred tons, and in which vessels can with ease and safety be received and repaired.

8. The subsidy payable in respect of dry docks which have been constructed under this Act shall be—

(*a*) if of the first-class, a sum not exceeding three and one half per cent of the cost of the work, as fixed and determined under subsection 2 of this section, each year during a period not exceeding thirty-five years from the time the Governor in Council has determined, under this Act, that the work has been completed;

(*b*) if of the second class, a sum not exceeding three and one half per cent of the cost of the work, as fixed and determined under subsection 2 of this section, each year during a period not exceeding twenty-five years from the time the Governor in Council has determined, under this Act, that the work has been completed;

(*c*) if of the third class, a sum not exceeding three per cent of the cost of the work, as fixed and determined under subsection 2 of this section, each year during a period not exceeding twenty years from the time the Governor in Council has determined, under this Act, that the work has been completed.

(2) The cost on which the subsidy shall be calculated shall be fixed and determined by the Governor in Council, upon the recommendation of the Minister, based upon a report of the Chief Engineer of the Department of Public Works, accompanied by plans and specifications of the proposed works, and such cost shall include the cost of all necessary equipment, machinery and plant, and any sum bona fide expended or to be expended by the company in the purchase of a site for the dry dock, but shall not include the value of any site received or to be received by the company by way of bonus or gift; and the amount of the subsidy shall be so fixed and determined before the agreement for payment of the subsidy is entered into.

9. Any agreement under this Act shall be for the construction of a dry dock in accordance with the plans and specifications referred to in subsection 2 of section 8 of this Act.

10. The work of constructing any dry dock for which a subsidy is authorized under the provisions of this Act, shall be done under the supervision of the Department of Public Works, and shall be completed within the time limited by, and according to the provisions of, the agreement in that behalf, unless the time for construction is extended by the Governor in Council; and the subsidy shall be payable, during the period agreed to by the Governor in Council under section 8 of this Act, from the time the Governor in Council, upon a report from the Minister, determines that the work required by the agreement has been completed, and that the reception and repairing of vessels as contemplated by this Act may forthwith be proceeded with at the dock.

11. Such agreement shall include a provision that the dock shall, after completion, be kept in repair and working order by the company; and keeping in repair and working order within the meaning of this Act shall include, in the case of a floating dry dock, painting and the employment of such other means to lessen and hinder corrosion of the submerged parts thereof as may be practicable.

12. Whenever it appears to the Governor in Council that any dock constructed under the provisions of this Act is not in condition of repair and working order, the Governor in Council may authorize and empower the Minister to cause possession to be taken of the dock on behalf of His Majesty and to expend out of any unappropriated money forming part of the Consolidated Revenue Fund of Canada, sufficient to put the dock in a state of efficiency and repair.

13. The Minister shall operate the said dry dock after such repairs are completed and while it is in the possession of His Majesty, and shall charge and collect the tolls or rates approved under section 15 of this Act in respect of the letting or hiring, operation or use of the said dock or of space therein or of any works connected therewith; and he shall, after payment thereout of operating expenses and maintenance, apply the balance first in repayment of the advances made under the next preceding section, and secondly in payment of accrued interest on bonds or other fixed obligations or securities of the company.

14. The Governor in Council may at any time direct the re-delivery of possession of the said dock to the company.

15. No tolls or rates shall be charged or taken by the company in respect of the letting or hiring, operation or use of the said dock, or of space therein, or of any works connected therewith, until the company has submitted a tariff of such tolls or rates and the said tariff has been approved by the Governor in Council; and no by-laws, rules, regulations or conditions respecting such letting, hiring, operation or use, shall have any force or effect until so submitted and approved.

(2) The Governor in Council may at any time disallow the whole or any part of such tariff or of such by-laws, rules, regulations or conditions, and may require the company, within a specified time, to submit such tariff, or substitute other tariff, tolls, by-laws, rules, regulations or conditions in lieu thereof, and, in default, may fix such tariff or prescribe other.

16. Before entering into an agreement for the construction of a floating dry dock under the provisions of this Act, the Governor in Council shall ascertain from expert engineering opinion what the probable time will be during which such floating dry dock, with reasonable maintenance, will be serviceable for the reception and repairing of vessels as contemplated by this Act; and if the Governor in Council is not satisfied that, with reasonable maintenance, such dock will be serviceable as aforesaid for a period at least twice as long as that during which the subsidy under this Act is payable, then, in such case, provision shall be made in such agreement that the company shall set aside annually such sum, to be therein mentioned, as the Governor in Council may deem sufficient to provide a fund wherewith to renew the whole of the floating part of such dock at the expiry of the time at which that part of the dock shall have ceased to be serviceable.

(2) Such fund shall be kept and invested in such manner as the Governor in Council may direct.

17. Upon the application of the Governor in Council or any Minister, Member of the King's Privy Council for Canada, ships or vessels in the British Navy Service, in the Naval Service of Canada, and other ships or vessels the property of or employed by His Majesty, shall at all times be entitled to the use of such docks in priority to all other vessels.

18. The company, before receiving the first payment of subsidy under the authority of this Act, and annually thereafter, on or before the first day of January, shall file in the office of the Minister, a statement, verified to the satisfaction of the Minister, setting forth the financial state of the company, including a statement in detail of the receipts from every source, and the expenditures for the year.

19. *The Dry Dock Subsidies Act,* chapter 24 of the statutes of 1908, is repealed.

2 GEORGE V.

CHAP. 20.

An Act to amend the Dry Docks Subsidies Act, 1910.

[*Assented to 1st April, 1912.*]

HIS MAJESTY, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. This Act may be cited as *The Dry Docks Amendment Act, 1912.*

2. Paragraph (1) of section 7 of *The Dry Docks Subsidies Act, 1910,* is repealed and the following is substituted therefor:—

'(1) Dry docks of the first class, for naval and general purposes, costing for the purposes of subsidy calculation not more than five million five hundred thousand dollars in the case of dry docks specified in sub-paragraph (*a*) hereunder, and not more than four million dollars in the case of dry docks specified in sub-paragraph (*b*) hereunder; being:—

(*a*) dry docks, other than floating dry docks, of dimensions when completed of not less than the principal dimensions next hereinafter mentioned, that is to say, clear length on bottom from caisson groove or hollow-quoin to head, eleven hundred and fifty feet, clear width of entrance one hundred and ten feet, depth of water over the sill, at high water ordinary spring tides, thirty-seven feet; and

(*b*) floating dry docks, of a lifting capacity of at least twenty-five thousand tons, in which vessels can with ease and safety be received and repaired:—

'provided, however, that any such dry dock shall not, for the purposes of this Act, be deemed to be a dry dock of the first class unless there can be received and repaired therein with ease and safety the largest ships or vessels of the British Navy existing at the time at which the contract is entered into.'

3. Except as herein specifically varied, all the provisions of *The Dry Docks Subsidies Act, 1910,* shall apply to any dock constructed under this Act.

NATIONAL ART GALLERY

REPORT

FOR THE FISCAL YEAR ENDED MARCH 31, 1911

NATIONAL ART GALLERY.

OFFICE OF THE DIRECTOR,
OTTAWA, June 22, 1912.

D. EWART, ESQ., I.S.O.,
Chief Architect Department of Public Works,
Ottawa.

DEAR SIR,—I beg to enclose the report of the Advisory Arts Council in charge of the National Art Gallery of Canada, 1911-12, signed by the President of the Council and myself. Trusting that it is in order.

Yours truly,

(Sgd.) ERIC BROWN.

THE REPORT OF THE ADVISORY ARTS COUNCIL

IN CHARGE OF

THE NATIONAL ART GALLERY OF CANADA.

1911–1912.

The most important work of the past year has been the completion of the transference of the National Art Gallery to its new premises in the Victoria Memorial Museum and its re-opening there in April, 1912, to the public.

With regard to the formal re-opening of the National Gallery by H.R.H. The Duke of Connaught, it was decided that it be postponed until a date shortly after the reassembling of Parliament in the autumn of 1912.

During the past year, a great deal of work has been done in the arranging and fitting up of the picture galleries and in the arranging and setting up of the beginning of a representative collection of casts of ancient, mediæval and modern sculpture in the lower galleries. A complete list of the casts purchased is included in this report.

It is intended to largely augment the collection of casts and to this end the Advisory Arts Council are now in correspondence with the Victoria and Albert Museum, London, with regard to the formation of a type collection of British sculpture which will give the history of such sculpture since the time of the Roman occupation.

The results achieved since the appointment of the Advisory Arts Council are very encouraging and the council hope that the necessity of erecting a building for the sole purpose of the National Gallery will be shortly recognized. The present premises are already as fully occupied as is desirable and will soon be entirely overcrowded.

With a view to increasing the usefulness of the National Gallery to the public, it has been decided to keep the galleries open on Saturday afternoons and on all public and Government holidays, and it is to be hoped that the increasing attendance on

these days will demonstrate the need of having the galleries open on Sunday afternoons in the near future.

Turnstiles have been fitted to the entrances to the galleries so that all visitors in future may be numbered and a record of attendance kept.

An illustrated catalogue containing biographical notes on all the artists represented in the National Gallery, has been prepared by the Director. It is now on sale. In addition, the pictures are all suitably labelled in both English and French for the benefit of those who do not wish to purchase the catalogue.

Everything possible has been done to make the National Gallery attractive to the public and to fulfil its purpose of usefulness as an educative and pleasure-giving exhibition.

Painting easels and stools have been provided for those who wish to copy the pictures in the National Gallery.

The Advisory Arts Council met on four occasions under the presidency of Sir Edmund Walker and the following pictures, drawings and sculptures were added to the possessions of the National Gallery:—

PAINTINGS.

The Rt. Hon. John Hookham Frère, John Hoppner, R.A.
John Herring, Esq., William Hogarth.
Pêcheurs de Clohars, Henri Moret.
Dieppe Harbour, J. M. Barnsley.
Portrait of a Cardinal, Caravaggio.
Portrait of a Young Lady, Sir Peter Lely.
Snowbound Boats, Ernest Lawson.
Henry Wentworth Monk, Esq., Holman Hunt, O.M.
Madonna and Child, Marco Bello.
St. Paul's Cathedral, J. Kerr Lawson.
Still Life, Jan D. de Heem.
Bacchante (study), J. M. Swan, R.A.
Evening Cloud of the Northland, J. W. Beatty, A.R.C.A.
Aubrey Beauclerk, Esq., Sir William Beechey, R.A.
Western Sunlight, C. W. Jeffereys.
Mists and Glaciers of the Selkirks, F. M. Bell-Smith, R.C.A.
Milman St. Chelsea, Walter Greaves.
Rose and Pink, J. McN. Whistler.
Dieppe, The Beach, J. W. Morrice.
In the Laurentians, Winter, Clarence Gagnon, A.R.C.A.
The Beggar, Sebastian Gomez.
Still Life, Dead Swan, Frans Snyders.
The Drive, Lauren Harris.
Stubble Fields, Helen McNicoll.
The Five Senses, Frans Floris.
Thomas Taylor, Esq., Sir Thomas Lawrence, P.R.A.
December Day at Sea, W. St. Thomas Smith, A.R.C.A.

DRAWINGS AND ETCHINGS.

17 drawings by the early Italian masters, from the Duke of Rutland's collection, as follows:—
Presentation in the Temple, Cavalière d'Arpino, 1568-1640.
Angels, Federigo Barocci, 1528-1612.
A Mandolin Player and a Study, Annibale Carracci, 1560-1609.

Peace, Cangiati.
Pope Urban VIII, Pietro Da Cortona, 1596-1669.
Christ Taken to Torture, Raymond De La Fage, 1656-1684.
An Arab in the Desert, Adam Elsheimer, 1574-1620.
Landscape, Guercino, 1591-1666.
Interior of a Farm, Adriaen Van Ostade, 1610-1685.
Helen and Paris, Baldassare Peruzzi, 1418-1536.
An Adoration, Jacopo Da Ponte, 1510-1592.
The Disciples at Emmaus, School of Raphael Santi, about 1520.
Faith, School of Jacopo Robusti, Tintoretto, 1512-1594.
A Somersault, Johann Rottenhammer, 1564-1623.
The Holy Family, Bartolommeo Schidone, 1560-1616.
Virgin and Child, Taddeo Zucchero, 1529-1566.
Virgin and Child, Ludovico Carracci, 1555-1619.
Barbizon drawings, as follows:—

Landscape.. .. ..*Th. Rousseau.*
Valley and River.. .. ..*Th. Rousseau.*
Daphnis and Chloe.. .. ..*J. F. Millet.*
Oxen Crossing a Stream.. .. ..*A. G. Décamps*
Albanian.. .. ..*A. G. Décamps.*
Windy Weather.. .. ..*C. F. Daubigny.*
Valley with Trees.. .. ..*Th. Rousseau.*
Jeune Mère, &c.. .. ..*J. F. Millet.*
Farmyard.. .. ..*C. Jacques.*
Chartres.. .. ..*H. Le Sidaner.*
Landscape.. .. ..*C. F. Daubigny.*
Landscape.. .. ..*A. Vollon.*
Fisherman.. .. ..*C. F. Daubigny.*
Landscape.. .. ..*J. B. C. Corot.*
Apuleius.. .. ..*J. F. Millet.*

Drawings.. .. ..*J. M. Barnsley*
Etchings.. .. ..*Caroline Armington.*
Etchings.. .. ..*Frank Armington.*
Etchings.. .. ..*W. J. Thomson.*

BRONZE.

The Lioness Drinking.. .. ..*J. M. Swan, R.A.*

IVORY CARVING.

Death of Wolff.. .. ..*Unknown.*

The following pictures have been presented to the National Gallery:—

Les Rives de l'Eure.. .. ..*Gustave Loisseau.*
(Presented by Messrs. Durand-Ruel.)

Marigolds Cove, Late Evening.. .. ..*Léon Dabo.*
(Presented by Rev. N. D. Hillis, Plymouth Church, Brooklyn, N.Y.)

Portrait of H.R.H. Duke of Kent,.. .. .. *Sir William Beechy, R.A.*
(Presented by H.R.H. the Princess Louise.)

Casts:—

COURT OF THE PARTHENON.

Theseus (marble).
The Fates (marble).
Selene (marble).
Horse's Head (marble).
The Ilissos (marble).
Metopes (4) (marble).
Parthenon Frieze, Portion (marble).
Charioteer (marble).
Balustrade Victories (4) (marble).
Winged Victory of Samothroce (marble).

(Case 1.)

Tanagra Figures.
Parthenon Frieze Model—Heming.
Aphrodite, (small marble head).
Woman, (small marble head).
Woman, (small marble head).
Dancer, (bronze torso).
Dragon's Head (bronze).
Male Head, (bronze).

HALL OF THE BUSTS.

Julius Cesar (marble head).
Nero (marble head).
Herennia Etruscilla (marble head).
Young Augustus (marble head).
Alexander the Great (marble head).
Hermaphrodite, (marble head).
Young Satyr, (marble head).
Head of Pericles, (marble head).
Homer, (marble head).
Boy's Head, (bronze).
Victor in Olympic Games, (bronze).
Apollo, (bronze head) Archaic.

COURT OF THE LAOCOON.

Laocoon (marble).
Herackles Belvedère (marble).
Hermes of Praxiteles (marble).
Boy and Goose (marble).
Faun Playing the Scabellum (marble).
Venus of Milo (marble).
Demosthenes (marble).
Idolino (bronze).
Praying Boy (bronze).

COURT OF THE MADONNAS.

Virgin and St. Elizabeth (marble).
Marzocco Lion, Donatello (marble).
Boy and Dolphin (bronze).
Adam and Eve (3 panels marble).
Singing Choir, Luca della Robbia, (3 panels marble).
Dancing Cherubs, Donatello, (1 panel marble).
Virgin Adored, Triptych, Mina da Fiesole, (marble).
Boys Playing Instruments, (4 bronze panels) Donatello.
Virgin and Child, relief, Benedetto da Majano.
Virgin and Child, (terra cotta plaque) Desiderio sa Settignano.
Virgin and Child, relief, Desiderio sa Settignano.
Virgin and Child, (terra cotta plaque) Desiderio sa Settignana.
Virgin and Child, (terra cotta plaque) Antonio Rossellino.
Virgin and Child, ((marble plaque) Andrea della Robbia.
Virgin and Child, (bas relief) Antonio Ressellino.
Virgin adoring Child, (bas relief) Andrea Della Robbia.
Virgin and Child, (relief) Donatello.
Virgin and Child and St. John, (terra cotta plaque) Giovanni Bastianini.
Virgin and Child, (Bas relief) Terra cotta, Andrea Verrocchio.
Virgin and Child (Terra Cotta plaque) Donatello.
Virgin and Child, (Plaque very low relief) Donatello.
Three Angels' Heads, Nanni D'Antonio del Banco, from the doorway of the Cathedral at Florence.
The Annunciation, Virgin and Angel, from Santa Croce, Florence, Donatello.

SECOND FLOOR.

COURT OF THE CATHEDRALS.

Jesus Christ, Amiens, (stone).
Virgin and Child, Amiens (stone).
St. Peter, Amiens (stone).
St. Ann, bust, Rheims (stone).
St. Joseph, bust, Rheims (stone).
Isaiah in Niche, Souillac (stone).
Man, Stone Column, Corbeil Cathedral.
Woman, Stone Column, Corbdil Cathedral.
Man, Stone Column, Chartres.
Woman, Stone Column, Chartres.
Christ in Glory, Chartres (stone).
Visitation, Chartres, (stone).
Archaic Figure Crowned, Chartres (stone).
Athene, (marble bust).
Zeus, (bronze head) Archaic.
Hypnos, (bronze head).
Pan. (marble).
Woman, (marble head) (restored).
Asclepius, (marble head).
Woman (marble head).

(CASE II.)

Cypriote Pottery.

(CASE III.)

Cypriote Heads.

HALL OF THE TOMBS.

Gaston de Foix (marble).
Charles IV of Anjou (marble).
Illaria del Caretto (marble).
Colleone, (bronze bust).
Marble bust of an unknown woman, (attributed to Francesco Laurana).
Dante, (marble).
Bronze Head, Portrait, Antonio del Pollajuolo.
Wax Bust, Woman, (attributed to Raphael.)
Christ, (Bronze Head) Donatello.
St. John (Bronze Head) Donatello.
St. George (Bronze Head) Donatello.
Mask, Guido Guidarelli, (marble).
Head Barbara, (from Forli).
Lion Rampant, Arms of Gianfigliazza.
Boar, Pietro Tacca (Bronze).
Sacrifice of Isaac, (Bronze Panel) Brunelleschi.
Sacrifice of Isaac, (Bronze Panel) Ghiberti.
Complete Panel, Pope and Attendants (Bronze).
Panel Figure with Eagle, Della Robbia (Bronze).
Annunciation and Temptation, (2 bronze panels) Ghiberti.
St. John, Donatelli (marble relief).

HALL OF THE TORSO.

Demeter (marble).
Youth, marble torso male, by Stephanos, Scholar of Pasiteles.
Youth, marble torso, male.
The Dancer (marble).
Nereid (marble).
Aphrodite, Torso (marble).

HALL OF MICHEL-ANGELO.

Head of David (marble).
Head of Moses (marble).
Head of Michel-Angelo (bronze).
Virgin and Child, (seated) Bruges Cathedral, (marble).
Dawn, (marble head) Tomb of Lorenzo di Medici.
Evening, (marble mask) Tomb of Lorenzo di Medici.
Day, (marble mask) Tomb of Giuliano di Medici.
Head of Virgin, Medici Chapel (marble).
Virgin and Child and St. John, Plaque (marble).

HALL OF THE VIRGINS.

Angel, Bronze, Château de Lude.
Retable (stone).
Virgin and Child, Paris Cathedral (stone).
Prophet in Niche, Rheims (stone).
Foolish Virgin, (stone statue) Strasbourg.
Virgin (stone head) Strasbourg.

Prieuse, Nuremburg (wood).
Mask of Phillippe VI, Louvre (stone).
Isabella of Bavaria, St. Denis Cathedral (stone).
St. Mathew writing at the dictation of the Angel (stone).
Viticulture, (stone relief).
Man Thinking, (stone relief).
Woman at Fire, Rheims (stone relief).
Jean de Vienne, Château Pagny (stone).
St. James, Beauvais (stone).
Negro Magi, Strasbourg (stone).
Head of Virgin, Strasbourg (stone).
Head of Magi, Crowned, (stone).
Jesus Christ, Beauvais, (stone).
Jacques de Lichtenburg, Strasbourg, (stone).
Barbe de Hottenheim, Strasbourg, (stone).
Head of St. Maurice, (stone).
Wise Virgin, statue, Strasbourg, (stone).
Virgin and Child, Orcival, (stone).
Foolish Virgin, Veiled, (stone).
Mask of Young Woman, (stone).

CASE IV.

Romanesque Cups.

HALL OF THE FRENCH RENAISSANCE.

Tomb of the Children of Charles VIII of France, (marble).
Virgin and Child, Echouen, (marble).
Head of Virgin, (marble) St. Galmier.
Charlotte de France, (marble), St. Denis.
Claude de France, (marble), St. Denis.
Morvilliers, (bronze bust).
Henri IV France (bronze bust).
Diana of Poitiers (bronze statue).
Stone Panel, Fountain of Innocents, Paris, (stone).
2 Stone Panels, Fountain of Innocents, Paris, (stone).
Head of Buffon, (marble).
Head of Young Woman, Unknown, (marble).

B. E. WALKER,
President.

ERIC BROWN,
Director.

NAMES OF THE CHIEF OFFICERS

OF THE

DEPARTMENT OF PUBLIC WORKS

WITH

DATES OF APPOINTMENT, Etc., FROM 1841 TO 1912.

The names and dates of the appointments, &c., of the principal Officials of the Department of Public Works, from 1841 to 1912.

Names.	Capacity or Office.	Date of Appointment. Served. From	To
Under Statute 4-5 Vic., Chap. 38.			
CORPORATION BOARD OF WORKS.			
Killaly., Hon. H. H.	Chairman		
Daly, Hon. D.	Members	Dec. 29, 1841	Oct. 3, 1844
Harrison, S.B			
Sullivan, R. B			
Davidson, J., Esq.			
Begly, Thomas A	Secretary	Aug. 17, 1841	
Keefer. Samuel	Chief Engineer	" 17, 1841	
Rubidge, F.B	Architect and Asst. Chief Engineer	Dec. 15, 1841	
NEW BOARD OF WORKS.			
Killaly, Hon. H. H	Chairman		
Daly, Hon. D.	Members	Oct. 4, 1844	June 8, 1846
Draper, Hon. W. H			
Morris, Hon. W			
Papineau. Hon. D. B			
Under Statute 9th Vic., Cap. 37, &c.			
Robinson, Hon. W. B	Chief Commissioner	June 12, 1846	Mar. 10, 1848
Tache, Hon. E. P.	" "	Mar. 11, 1848	Nov. 26, 1849
Chabot, Hon. J	" "	Dec. 13, 1849	Mar. 31, 1850
Merritt, Hon. W.H	" "	April 8, 1850	Feb. 11, 1851
Bourret, Hon. J	" "	Feb. 12, 1851	Oct. 27, 1851
Young, Hon. John	" "	Oct. 28, 1851	Sept. 22, 1852
Chabot, Hon. J	" "	Sept. 23, 1852	Jan. 26, 1855
Lemieux, Hon. F	" "	Jan. 27, 1855	Nov. 25, 1857
Alleyn, Hon. C	" "	Nov. 26, 1857	Aug. 1, 1858
Holton, Hon. L. H	" "	Aug. 2, 1858	Aug. 6, 1858
Sicotte, Hon. L. V	" "	" 7, 1858	Jan. 10, 1859
Rose, Hon. John	" "	Jan. 11, 1859	June 12, 1861
Cauchon, Hon. Joseph	Commissioner	June 13, 1861	May 23, 1862
Tessier, Hon. U. J	"	May 24, 1862	May 27, 1863
Drummond, Hon. L. T	"	" 28, 1863	July 23, 1863
Laframboise, Hon. M.	"	July 24, 1863	Mar. 29, 1864
Chapais, J. C	"	Mar. 30, 1864	June 30, 1867
Casgrain, Hon. Charles Eus	Second Commissioner	July 9, 1846	Feb. 29, 1848
Cameron, Hon. M.	Assistant Commissioner	Mar. 11, 1848	Feb. 1, 1850
Wettenhall, James Esq	" "	Feb. 2, 1850	April 16, 1850
Bourret, Hon. Joseph	" "	April 17, 1850	Feb. 11, 1851
Killaly, Hon. H. H	" "	Feb. 12, 1851	May 6, 1859
Keefer, Samuel	Deputy Commissioner	May 6, 1859	Mar. 7, 1864
Trudeau, Toussaint	" "	Mar. 8, 1864	May 29, 1868
Begley, Thomas A	Secretary	Feb. 10, 1841	Oct. 31, 1857
Trudeau, Toussaint	"	Dec. 13, 1859	Mar. 7, 1864
Braun, Frederick	"	Mar. 8, 1864	July 1, 1867
Page, John	Chief Engineer	Oct. 31, 1873	Oct. 1, 1879

The names and dates of the appointments, &c., of the principal Officers of the Department of Public Works, from 1841 to 1912—*Concluded.*

Names.	Capacity or Office.	Date of Appointment. Served. From.	To.
Under Statute 31 Vic., Cap. 12.			
McDougall, Hon. Wm.	Minister	July 1, 1867	Dec. 7, 1869
Langevin, C.B., Hon. Hector L	"	Dec. 8, 1869	Nov. 6, 1873
Mackenzie, Hon. Alexander	"	Nov. 7, 1873	Oct. 16, 1878
Tupper, C.B., K.C.M.G., Sir Charles	"	Oct. 17, 1878	May 19, 1879
Langevin, C.B., K.C.M.G., Sir Hector L	"	May 20, 1879	Aug. 11, 1891
Smith, Hon. Frank	Acting Minister	Aug. 14, 1891	Jan. 10, 1892
Ouimet, Hon. Joseph Alderic	Minister	Jan. 11, 1892	April 30, 1896
Desjardins, Hon. Alphonse	"	May 1, 1896	July 12, 1896
Tarte, Hon. J. Israel	"	July 13, 1896	Oct. 21, 1902
Sutherland, Hon. James	"	Nov. 11, 1902	May 3, 1905
Hyman, Hon. Charles S	"	May 22, 1905	Aug. 29, 1907
Pugsley, Hon. Wm	"	Aug. 30, 1907	Oct. 12, 1911
Monk, Hon. F. D	"	Oct. 12, 1911	
Trudeau, Toussaint	Deputy Minister	May 29, 1868	Oct. 1, 1879
Baillargé, G. F	"	Oct. 4, 1879	Dec. 31, 1890
Gobeil, A., I.S.O	"	Jan. 1, 1891	June 2, 1908
Hunter, James B	"	July 1, 1908	
St. Laurent, Arthur	Assistant Deputy Minister	" 1, 1908	
Braun, Frederick	Secretary	" 1, 1867	Sept. 30, 1879
Chapleau, S.	"	Oct. 1, 1879	Nov. 4, 1880
Ennis, F. H.	"	Nov. 5, 1880	Jan. 13, 1885
Gobeil, A.	"	Jan. 23, 1885	Dec. 31, 1890
Roy, E. F. E	"	" 1, 1891	" 31, 1900
Gelinas, Fred	"	June 8, 1901	July 2, 1908
Tessier, Napoleon	"	Aug. 11, 1908	June 2, 1910
Desrochers, Rodolphe Charles	"	July 1, 1910	
McPherson, D. A	Assistant Secretary	Jan. 18, 1891	April 11, 1893
Desrochers, Rodolphe Charles	"	" 8, 1896	June 30, 1910
Dillon, R. W	"	Dec. 19, 1910	March 23, 1911
Colman, L. H	"	May 23, 1911	
Page, John	Chief Engineer	July 1, 1868	Oct. 1, 1879
Perley, H. F	"	Nov. 25, 1880	July 10, 1891
Coste, Louis	"	July 26, 1892	Mar. 18, 1899
Lafleur, E. D	"	Jan. 7, 1905	
Dufresne, A. R	Assistant Chief Engineer	May 13, 1910	
Scott, Thos. S.	Chief Architect	" 26, 1871	Oct. 30, 1881
Fuller, Thomas	"	Oct. 31, 1881	June 30, 1897
Ewart, David, I.S.O.	"	Nov. 2, 1897	

NAMES

OF THE

Officials Employed on the Slides and Booms of Canada

ON MARCH 31, 1812

WITH

DATES OF APPOINTMENT, SALARIES, ETC.

OFFICIALS EMPLOYED ON THE SLIDES AND BOOMS.

STATEMENT showing the Names, Dates of Appointment, Salaries, &c,, of persons employed on the various Slides and Booms on March 31, 1912.

Name.	Date of Birth.	Position.	Where employed.	Date of Appointment.	Salary.	Remarks.
					$ cts.	
Collector of Public Works Revenue.						
E. T. Smith	Nov. 26, 1846.	Collector—First Div. Subdivision "B"	Ottawa	July 1, 1889.	2,425 00 a year.	Date of first appointment to Crown Timber Office, Ottawa, June 23, 1864. Clerk in Dept. of Inland Revenue, July 1, 1870, to June 30, 1889. Transferred to civil list with rank of first class clerk, January 5, 1892. Chief clerk, July 1, 1906.
James Steen	June 17, 1830.	Boatman	"	July 12, 1889.	60 00 a month	Date of first appointment, May 26, 1861. Timber counter, Ottawa, for Department of Inland Revenue, January 7, 1884, to June 30, 1889.
J. Brassard	Jan. 9, 1859.	"	"	Mar. 1, 1901.	70 00 "	
Saguenay District.						
William Dallaire	Oct. 8, 1857.	Boom master	Chicoutimi	April 1, 1907.	70 00 "	
L. J. Savard		Asss. boom master	"	April 13, 1911.	65 00 "	
Arm. Ouellet	June 15, 1879.	Boom keeper	"	May 1, 1906.	40 00 "	
Willie Dallaire	Dec. 23, 1882.	"	"	May 1, 1906.	40 00 "	
N. Duchesne	Jan. 6, 1880.	"	"	April 6, 1908.	40 00 "	
St. Maurice District.						
Ed. Bellefeuille		Paymaster	Three Rivers	Feb. 3, 1912.	1,100 00 a year.	
Jos. Page	July 7, 1845.	Boom master	Mouth of St. Maurice	Dec. 10, 1879.	75 00 a month	
John Dick	April 15, 1848.	Asst. boom master	Three Rivers	May 21, 1898.	75 00 "	
H. Bourassa	Aug. 15, 1859.	"	Ste. Flore	Dec. 1, 1906.	52 00 "	
E. Désilet		Boom master	Grandes Piles	Dec. 21, 1911.	75 00 "	
N. Lymburner	July 22, 1855.	"	Shawinigan Falls	July 1, 1895.	75 00 "	
J. Matteau		"	" Bay	Jan. 23, 1912.	75 00 "	
Joseph Paquin		"	Grand-Mere	Nov. 21, 1911.	75 00 "	
C. Lymburner		Asst. boom master	Capaux Corneilles	Feb. 26, 1912.	75 00 "	

Ottawa District.						
G. P. Brophy	Feb. 24, 1846.	Superintendent	Ottawa.	July 6, 1873.	3,000 00 a year	*Ottawa River Works:* In addition to the above officers, &c., there are employed during the running season, one foreman on slide at $1.50, and one assistant foreman at $1.25 a day; also 25 to 30 labourers at $1 to $1.40 a working day.
J. Kent	Jan. 28, 1864.	Accountant*	"	Aug. 1, 1886	1,700 00 "	
J. C. Scott	June 27, 1865.	Assist. engineer	"	April 1, 1889.	2,000 00 "	
S. E. Smith	May 25, 1869.	Clerk	"	Nov. 7, 1904.	1,150 00 "	
A. A. Nantel, Miss	May 31, 1887.	Typewriter	"	July 2, 1908.	700 00 "	
Wm. Cain	April 22, 1860.	Messenger	"	Jan. 1, 1892.	730 00 "	
Geo. P. Huguet	Mar. 13, 1883.	Draughtsman	"	July 2, 1905.	1,300 00 "	
G. R. Nash	Oct. 16, 1882.	"	"	Aug. 26, 1904.	1,500 00 "	
D. Noonan	June 17, 1840.	Boom master	Gatineau	Mar. 21, 1878.	750 00 "	
J. Souliére	Nov. 8, 1829.	Deputy slide master	Chaudiére	——, 1858.	3 00 a day	
L. Cousineau	Dec. 30, 1852.	" "	Hull	Oct. 26, 1911.	2 00 "	Employed about six months.
Jos. Gaudette	June 24, 1840.	" "	Arnprior	May 17, 1912	2 50 "	Actively employed about seven months.
Joseph McCrea	Mar. 26, 1859.	Boom master	Springtown	May 15, 1880.	25 00 a month	Employed about three months during season of navigation.
Patrick Barry	Mar. 27, 1858	Deputy slide master.	High Falls	Mar. 10, 1888.	1 50 a day	Employed four months during season of navigation. Oversees repairs in winter.
Duncan McLaren	Jan. 7, 1860.	" "	Portage du Fort	Sept 7, 1881.	456 25 a year	" "
N. Rochon	April 2, 1879.	" "	Black River	Mar. 1, 1900.	480 00 "	" "
H. B. Smith	June 5, 1856.	" "	Lower Petawawa	May 13, 1912.	2 00 a day	" "
J. R. Jennings	April 28, 1843.	" "	Upper Petawawa	June 2, 1905.	2 00 "	" "
Wm. Thomson	May 3, 1843.	" "	Mountain	Sept. 2, 1879.	1 25 "	" 6 months "
S. Moorhead	May 3, 1861.	" "	Calumet	Mar. 1, 1901.	1 25 "	" 6 to 7 months "
John Mullin	July 27, 1851.	" "	Coulonge	April 10, 1899.	2 00 "	" 4 months "
Thos. Tait	Nov. 13, 1877.	" "	Dumoine	April 20, 1912.	2 00 "	Employed three months during season of nav. Will inspect works when required.
Jas. Carey	July 6, 1850.	In charge	Cedar Lake Dam	April 1, 1901.	2 00 "	
T. McAnulty	June 5, 1857.	Deputy slide master.	Crooked Chute	May 14, 1912.	2 00 "	
A. H. Johnson	Nov. 28, 1839.	"	Chenaux	—— —, 1865	3 00 "	Paid during season of navigation, seven months.
Newcastle District.						
Thos. Austin	June 5, 1857.	Slide master	Fenelon Falls	Jan. 1, 1912.	100 00 a year	Receives $360 a year as lock master from Department of Railways and Canals.
J. C. Bates		"	Burleigh	Feb. 6, 1907.	100 00 "	" "
Richelieu District.						
N. Menard		Boom master	Beloeil Station	May 21, 1908.	100 00 "	
Burlington Channel Swing Bridge.						
J. W. Tunnis	Nov. 19, 1859	Bridge attendant	Burlington	April 1, 1909.	65 00 a month	
D. Thompson	Mar. 2, 1866.	Bridge assistant	"	April 1, 1909.	1 75 a day	Employed nine months.
J. Hazel, Jr		Bridge assistant	"	Mar. 20, 1911.	1 75 per day	" " "
T. Harvey	May 22, 1863.	" "	"	April 1, 1909.	1 75 "	" " "

*Appointed Accountant and Paymaster, October 4, 1904.

LOCKS, ETC., EMPLOYEES.

STATEMENT showing the Names, Dates of Appointment, Salaries, &c.—*Concluded.*

Name.	Date of Birth.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
					$ cts.	
Yamaska Lock.						
O. Mineau	July 4, 1844.	Lock keeper	Yamaska	Sept. 1, 1885.	75 00 a month	Employed nine months.
H. Lambert	Aug. 20, 1844.	"	"	July 1, 1897.	50 00 "	" " "
Rivière du Lièvre Lock.						
O. Laframboise		Lock master	Rivière du Lièvre	May 1, 1912.	50 00 "	
Charles Brazeau	Dec. 23, 1862.	Labourer	"	Mar. 3, 1902.	45 00 "	Employed eight months.
Rivière Saint-Louis, Feeder.						
St. Andrew's Rapids Lock and dam.						
A. S. Innes	May —, 1870.	Superintendent	Red River, Man	April 1, 1910.	1,800 per an	
John Hay		Assistant supt	" "	Nov. 8, 1911.	1,200 "	
H. B. Johnston	July —, 1871.	Machinist	" "	April 1, 1910.	1,000 "	
N. Ross		Electrician	" "	Dec. 27, 1911.	960 00 "	Employed eight months during season
G. Moore	Dec. —, 1862.	Lockman	" "	May 5, 1910.	540 00 "	of navigation.
W. Fidler	Mar. —, 1866.	"	" "	May 5, 1910.	540 00 "	" " " "
C. Purden	July —, 1850.	"	" "	May 5, 1910.	540 00 "	" " " "

NAMES

OF

PERSONS EMPLOYED IN THE VARIOUS GRAVING DOCKS

ON MARCH 31, 1812

WITH

DATE OF APPOINTMENT, SALARIES, ETC.

GRAVING DOCK EMPLOYEES.

STATEMENT showing the Names, Dates of Appointment, Salaries, &c., of persons employed on the various Graving Docks, March 31, 1912

Name.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
Esquimalt Graving Dock, British Columbia.					
J. A. Gould	Dockmaster	Esquimalt	June 20, 1906	165 60 a month	
John Jeffcott	Engineer	"	Jan. 4, 1901	132 00 "	
F. N. Jones	Assistant engineer	"	Jan. 8, 1901	110 00 "	
A. D. Grieve	Carpenter	"	Dec. 1, 1878	126 50 "	
J. Young	Labourer	"	June 1, 1903	71 50 "	
J. Stock	"	"	July 1, 1894	71 50 "	
Chas. Jordan	Stoker	"	July 1, 1901	77 00 "	
Joseph Apleby	"	"	Jan. 1, 1909	77 00 "	
James Isbester	Watchman	"	July 24, 1909	71 50 "	
Levis Graving Dock.					
Alf. Samson	Dockmaster	Levis	Feb. 15, 1900	1,800 00 a year	
W. McDougall	Mechanical engineer	"	June 1, 1888	90 00 a month	
T. Després	Asst. mechanical engineer	"	July 21, 1901	70 00 "	
Casimir Bourassa	Fireman	"	Feb. 15, 1907	50 00 "	
Kingston Graving Dock.					
Dock leased May 1, 1910, for a period of 21 years to the Kingston Dry Dock and Shipbuilding Company, Limited.—W. J. Fair, Secretary.					

JOS. VINCENT.

NAMES

OF

ENGINEERS, ENGINEMEN, FIREMEN AND CARETAKERS

EMPLOYED AT THE

PUBLIC BUILDINGS THROUGHOUT THE DOMINION ON MARCH 31, 1912

DATE OF APPOINTMENT, SALARIES, ETC.

ENGINEERS AND CARETAKERS, PUBLIC BUILDINGS.

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on March 31, 1912.

Place.		Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time Employed each year.	Yearly Salary.
							$ cts.		$ cts.
Amherst	N. S.	Post office	J. H. Chapman	Jan. 3, 1846	Caretaker	Sept. 1, 1901	33 33	12 months	400 00
Antigonish	"	Public building	J. C. Fraser	May 31, 1847	"	Oct. 1, 1907	33 33	12 "	400 00
Annapolis	"	Post office and custom house	John McKay	Oct. 26, 1847	"	April 1, 1891	33 33	12 "	400 00
Arichat	"	Public building	Mrs. A. DeRooch	June 30, 1868	"	May 5, 1905	12 50	12 "	150 00
Baddeck	"	"	D. F. McKenzie	May 20, 1848	"	Jan. 21, 1899	33 33	12 "	400 00
Bridgewater	"	"	Thos. Cohoon	Jan. 9, 1853	"	" 19, 1909	33 33	12 "	400 00
Canso	"	"	G. A. Ryche	June 17, 1865	"	Dec. 8, 1911	33 33	12 "	400 00
Dartmouth	"	"	I. C. Henley	Dec. 11, 1846	"	May 22, 1894	33 33	12 "	400 00
Digby	"	"	F. Dennison	Nov. 8, 1841	"	Mar. 14, 1902	33 33	12 "	400 00
Glace Bay	"	"	Mrs. J. A. Currie		"	Dec. 20, 1909	50 00	12 "	600 00
Guysborough	"	"	W. G. Hadley	Nov. 29, 1844	"	May 2, 1906	4 16	12 "	50 00
Halifax	"	Dominion building	Richard Power	Aug. 15, 1834	Engineer	Oct. 1, 1871	62 50	12 "	750 00
"	"	"	J. DeYoung	Dec. 8, 1860	Fireman	Nov. 28, 1904	54 16	12 "	650 00
"	"	"	Jas. Dee	July 21, 1855	Watchman	Feb. 18, 1911	41 66	12 "	500 00
"	"	"	R. W. Anderson	Nov. 1850	Elevatorman	Oct. 31, 1910	54 16	12 "	650 00
"	"	Examining warehouse	M. O'Neil	Dec. 30, 1850	Caretaker	Oct. 1, 1897	54 16	12 "	650 00
"	"	Immigrant building	John Oxley	April 17, 1856	Fireman	Feb. 2, 1897	64 16	12 "	770 00
"	"	New custom house	J. Barnes	Dec. 3, 1857	Engineer	Jan. 28, 1907	64 16	12 "	770 00
"	"	" "	G. Selig	April 21, 1854	Fireman	April 26, 1907	54 16	12 "	650 00
"	"	" "	F. Warner	Oct. 8, 1860	"	May 1, 1907	41 66	12 "	500 00
"	"	" "	J. F. Sullivan	April 16, 1866	Asst. caretaker	July 1, 1892	37 50	12 "	450 00
"	"	" "	P. L. Nickerson	Mar. 4, 1887	Elevatorman	Feb. 6, 1911	54 16	12 "	650 00
"	"	" "	Geo. Crockford	June 19, 1855	Cleaner	July 7, 1910	50 00	12 "	600 00
"	"	" "	J. Handly	Aug. 10, 1854	Asst. Fire	Mar. 1, 1912	50 00	12 "	600 00
Inverness	"	Public building	J. A. McDonald	July 1, 1878	Caretaker	Dec. 1, 1911	33 33	12 "	400 00
Kentville	"	"	W. Hiltz	April 30, 1864	"	Nov. 14, 1900	33 33	12 "	400 00
Liverpool	"	"	James Clements	June 5, 1835	"	June 27, 1900	33 33	12 "	400 00
Lunenburg	"	"	N. Myra		"	Aug. 1, 1909	33 33	12 "	400 00
New Glasgow	"	Post office	K. Forbes	June 1851	"	Dec. 1, 1910	37 50	12 "	450 00
North Sydney	"	Public building	H. D. McMillan	Nov. 16, 1865	"	Mar. 11, 1911	33 33	12 "	400 00
Pictou	"	Post office and cust. house	Jas. Arbuckle	Feb. 18, 1836	"	Dec. 20, 1896	50 0012	"	600 00
Shelburne	"	Public building	H. Swensburg	July 7, 1844	"	Feb. 17, 1911	33 3312	"	400 00
Springhill	"	Post office	J. A. Watt	Sept. 5, 1849	"	Dec. 1, 1903	37 5012	"	450 00
Sydney Mines	"	Public building	C. McMillan	Nov. 25, 1857	"	Jan. 19, 1905	37 5012	"	450 00
Sydney South	"	Post office and cust. house	Mrs. M. Keefe	Jan. 4, 1850	"	" 13, 1904	33 3312	"	400 00

Truro	"	Post office and cust. house.	Alex P. Smith	May	17, 1837	Caretaker	April	1, 1897	33 33	12 months	400 00
Westville	"	Public building	J. P. Collins	Jan.	14, 1865	"	July	6, 1909	33 33	12 "	400 00
Windsor	"	Post office	J. A. Mosher	Nov.	16, 1841	"	Feb.	13, 1899	33 33	12 "	400 00
Yarmouth	"	Public building	W. H. Whelan	Dec.	23, 1841	"	Mar.	1, 1900	33 33	12 "	400 00
Charlottetown	P.E.I.	Dominion building	A. McKenzie	May.	12, 1856	"	Nov.	1, 1896	50 00	12 "	600 00
"	"	"	E. Cameron	Nov.	2, 1853	Messenger	"	15, 1906	41 66	12 "	500 00
"	"	"	M. A. Allen	Aug.	1, 1855	"	Jan.	24, 1898	50 00	12 "	600 00
"	"	"	P. McKenna	"	4, 1841	Asst. Caretaker	May	13, 1907	50 00	12 "	600 00
"	"	Old Bank of Com.	Ed. Flynn	May.	16, 1856	Caretaker			41 66	12 "	500 00
Georgetown	"	Public building	A. D. McPhie, P.M.	Oct.	29, 1866	"	Mar.	27, 1909	10 00	12 "	120 00
Montague	"	"	H. L. Peardon	April	13, 1885	"	Aug.	27, 1906	13 33	12 "	160 00
Souris	"	"	Thos. Shea	Aug.	11, 1850	"	Dec.	8, 1906	29 16	12 "	350 00
Summerside	"	Dominion building	A. McSween	Sept.	25, 1835	"	Sept.	1, 1897	33 33	12 "	400 00
Bathurst	N.B.	Post office	J. H. Doucet	July	16, 1846	"	Mar	26, 1906	33 33	12 "	400 00
Campbellton	"	Public building	C. Watson	"	15, 1855	"	"	1, 1912	33 33	12 "	400 00
Carleton, St. John	"	Post office	Mrs. J C. Leonard	April	11, 1859	"	Sept.	15, 1908	33 33	12 "	400 00
Chatham	"	"	C. Johnson	May	18, 1856	Asst. Caretaker	Mar.	27, 1895	25 00	12 "	300 00
Dalhousie	"	"	Wm. E. Gould	Jan.	1, 1853	Caretaker	Nov.	26, 1890	33 33	12 "	400 00
Fredericton	"	"	L. Yerxa	Dec.	18, 1843	"	July	1, 1900	41 66	12 "	500 00
Marysville	"	"	J. Inch, P.M.	Sept.	10, 1850	"	May	31, 1912	12 50	12 "	150 00
Moncton	"	"	E. B. Hicks	Jan.	11, 1832	"	Jan.	11, 1886	37 50	12 "	450 00
Newcastle	"	"	Patrick Keating	Mar.	13, 1840	"	Oct.	23, 1886	33 33	12 "	400 00
Richibucto	"	"	G. Holleran	Sept.	19, 1863	"	April	5, 1912	33 33	12 "	400 00
St. John	"	Custom house	Neil J. Morrison	July	25, 1858	Eng. & caretaker	"	27, 1894	70 00	12 "	840 00
"	"	"	Christopher White	Nov.	20, 1844	Fireman	Nov.	9, 1885	50 00	12 "	600 00
"	"	"	J. T. Logan	Sept.	1, 1882	Asst. fireman	Dec.	23, 1908	50 00	12 "	600 00
"	"	"	James A. Paul	Aug.	1, 1837	Messenger	Oct.	13, 1891	58 33	12 "	700 00
"	"	Post office	James Wolfe	Mar.	10, 1850	Engineer	Dec.	1, 1893	60 00	12 "	720 00
"	"	"	Edward Haney	Feb.	22, 1849	Hoist attendant	Nov.	27, 1882	55 00	12 "	660 00
"	"	"	A. E. Theal	May	14, 1845	Caretaker	"	6, 1907	50 00	12 "	600 00
"	"	"	H. R. Garrity	Sept.	6, 1877	Asst. caretaker	April	16, 1910	25 00	12 "	300 00
"	"	Detention hospital	Jas. Gray		1856	Fireman	Dec.	12, 1908	50 00	12 "	600 00
"	"	"	R. Stackhouse	Oct.	13, 1851	Watchman	Nov.	15, 1911	46 50	12 "	558 00
"	"	Immigration building	F. Haslam	Dec.	30, 1876	Fireman	Jan.	29, 1903	55 00	12 "	660 00
"	"	" "	Jos. Sleath	Oct.	3, 1872	"	Sept.	1902	55 00	12 "	660 00
"	"	Quarentine station	Fred. Hargrave	April	25, 1871	"	Dec	29, 1904	60 00	12 "	720 00
St. Stephen	"	Post office	Samual Topping	"	2, 1839	Caretaker	May.	25, 1887	45 83	12 "	550 00
Sussex	"	"	Mrs. N. Dryden	June	21, 1840	"	Mar.	26, 1901	33 33	12 "	400 00
Tracadie	"	Lazaretto	P. Arseneault	May	19, 1869	Fireman	Dec.	24, 1908	40 00	12 "	480 00
"	"	"	B. Brideau	July	10, 1886	"	Jan.	10, 1909	30 00	12 "	360 00
Woodstock	"	Public building	Walter Hay	Nov.	15, 1844	Caretaker	Feb.	17, 1911	37 50	12 "	450 00
Acton Vale	P.Q.	Post office	J. B. Cartier	July	28, 1867	"	Sept.	9, 1910	41 66	12 "	500 00
Aylmer	"	"	D. J. Bourgeau, P.M.			"	July	17, 1912	8 33	12 "	100 00
Berthierville	"	"	J. A. Rocray	May	24, 1893	"	May	7, 1912	6 25	12 "	75 00
Buckingham	"	"	T. F. Bisson, P.M.	May	23, 1848	"	Feb.	3, 1903	10 00	12 "	120 00
Chicoutimi	"	Public building	G. A. Blais	Sept.	24, 1870	"	Dec	4, 1907	40 00	12 "	480 00
Coaticook	"	"	Israel Baldwin	Nov.	16, 1839	"	June	27, 1889	37 50	12 "	450 00
Cookshire	"	Post office	S. Wright	June	25, 1856	"	Feb.	4, 1909	33 33	12 "	400 00
Drummondville	"	Public building	A. Pare	April	27, 1842	"	June	5, 1902	33 33	12 "	400 00
Farnham (West)	"	Post office	J. Belanger	Jan.	19, 1847	"	Jan.	30, 1906	25 00	12 "	300 00

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on March 31, 1912—*Continued.*

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time Employed each year.	Yearly Salary.
						$ cts.		$ cts.
Fraserville ..... "	Post office.....	E. Dubé.....	Nov. 11, 1847	Caretaker... ..	May 12, 1911	33 33	12 months...	400 00
Granby..... "	Public building	W. Bourgois.....	Nov. 17, 1877	"	Jan. 1, 1912	25 00	12 "	300 00
Hochelaga..... "	Post office....	J. H. Brown, P. M.....	Oct. 7, 1851	"	Mar. 27, 1902	16 66	12 "	200 00
Hull..... .... "	"	J. T. Madore, P.M.....	Dec. 1, 1843	"	" 8, 1900	12 50	12 "	150 00
Iberville. .... "	Post office.....	A. Courtois.....	Jan. 20, 1869	"	May 7, 1907	40 00	12 "	480 00
Joliette..... "	"	A. Ratel...	Dec. 29, 1845	"	Sept. 1, 1897	33 33	12 "	400 00
Knowlton..... "	"	F. A. Knolton, P.M....	June 10, 1855	"	June. 12, 1909	12 50	12 "	150 00
Lachine..... . "	"	P. O. Roberts, P.M....	Sept. 7, 1846	"	Jan. 26, 1899	8 33	12 "	100 00
Lachute..... "	"	D. Joss.....	Oct. 10, 1857	"	April 28, 1909	33 33	12 "	400 00
Laprairie..... ..... "	"	Jos. Brisson, P.M.....	Nov. 11, 1869	"	Nov. 22, 1901	12 50	12 "	150 00
L'Assompton.. ..... "	"	A. Martel.....	1860	"	" 18, 1911	25 00	12 " ...	300 00
Lévis..... "	"	C. Lamontagne.....	Dec. 28, 1850	"	Mar. 17, 1908	35 41	12 "	425 00
Longueuil.... . ... "	"	H. Lamorre	April 23, 1849	"	Jan. 1, 1912	25 00	12 "	300 00
Magog. ... . "	" .....i.....	N. Lacasse	June 16, 1869	"	July 1, 1909	33 33	12 "	400 00
Megantic..... ..... "	"	S. Brousseau.....	Sept 25, 1842	"	Feb. 15, 1912	25 00	12 "	300 00
Montreal. .. .. "	Dominion buildings.....	J. T. Murphy....	May 6, 1865	Chief engin'r....	Mar. 2, 1903	108 33	12 "	1,300 00
" ..... . "	Examining warehouse.....	M. Boyer....	Feb. 18, 1848	Asst. engin'r....	" 4, 1882	65 00	12 "	780 00
" ..... "	"	Art. Lesieur.....	June 22, 1868	Hoist attendant.	April 18, 1905	55 00	12 "	660 00
" ..... "	" ...	Jos. Forgues.....	May 15, 1874	Asst. engineer..	Nov. 2, 1904	60 00	12 "	720 00
" .... "	"	Jos. Langevin.....	Mar. 10, 1850	Fireman.....	Oct. 18, 1904	55 00	12 " ...	660 00
" . ... "	"	A. Nuttall.....	Feb. 15, 1872	Electrician.....	June 1, 1905	65 00	12 "	780 00
" ..... "	"	J. B. Desjardins.....	Jan. 21, 1863	Cleaner	Jan. 26, 1907	50 00	12 "	600 00
" . ..... "	"	Samuel Lanctot.....	June 28, 1850	"	Nov. 23, 1905	50 00	12 "	600 00
" ..... "	"	P. Prudhomme...	Mar. 7, 1854	Hoist attendant.	Mar. 19, 1906	55 00	12 "	660 00
" .... "	"	R. Barthe	July. 12, 1863	Asst. messenger.	May 1, 1906	50 00	12 "	600 00
" . ... "	"	C. Varin...	May 13, 1883	Hoist attendant.	Jan. 21, 1911	50 00	12 "	600 00
" . ..... "	" ..	S. McGarry	June 15, 1873	" .	" 12, 1904	55 00	12 "	660 00
" ..... "	"	J. Neville....	Mar. 18, 1870	" .	" 12, 1904	55 00	12 "	660 00
" .... "	"	H. Marchand.....	Mar. 15, 1856	" .	Oct. 7, 1904	55 00	12 "	660 00
" ..... "	" ...	A. Drouin..... ..	June 14, 1868	" .	Nov. 28, 1904	55 00	12 "	660 00
" ..... "	"	J. Larocque	Nov. 25, 1856	Cleaner.....	Feb. 1, 1912	50 00	12 "	600 00
" ..... "	"	A. Trembley.....	April 12, 1862	Night fireman...	Oct. 25, 1907	55 00	12 " .. .	660 00
" ..... "	"	A. Barrette.....	Aug. 28, 1873	Hoist attendant.	July 21, 1908	60 00	12 "	720 00
" . ..... "	"	James Quinn.....	July 4, 1882	Freight hoist att.	" 2, 1908	60 00	12 "	720 00

Montreal	Que.	General Post Office	U. Paquette	Oct.	13, 1866	Cleaner	June	1, 1909	50	00	12		600 00
"	"	"	L. D. Thibault	Jan.	28, 1861	Electrician	Dec.	15, 1905	70	00	12		840 00
"	"	"	F. X. Lefebvre	Dec.	13, 1859	Asst. electrician.	June	28, 1905	65	00	12		780 00
"	"	"	Osias Renard	June	14, 1869	Night "	Feb.	2, 1907	65	00	12		780 00
"	"	"	M. Paré			Cleaner	Oct.	1, 1911	46	00	12		452 00
"	"	"	W. J. Tremblay			Freight hoist att	Dec,	1, 1911	55	00	12		660 00
"	"	"	I. Trudeau	Jan.	22, 1863	Caretaker	Oct.	1, 1902	60	00	12		720 00
"	"	"	Oscar Renaud	Feb.	19, 1862	Elevator man	Sept.	10, 1898	55	00	12		660 00
"	"	"	A. Daoust			"	April	1, 1912	55	00	12		660 00
"	"	"	L. Brault	Dec.	29, 1854	"	Sept.	1, 1901	55	00	12		660 00
"	"	"	A. Bourassa	June	1, 1857	Freight hoist at.	Aug.	4, 1893	55	00	12		660 00
"	"	"	C. Berthiaume	Nov.	8, 1870	Night watchman	July	2, 1902	55	00	12		660 00
"	"	"	O. de Ladurantaye	June	29, 1852	Pass. Hoist att	April	26, 1906	55	00	12		660 00
"	"	"	C. Vadeboncœur	May	17, 1842	Freight Hoist at.	Feb.	6, 1894	55	00	12		660 00
"	"	"	A. Chaput	Aug.	28, 1854	Elevator man	Nov.	1, 1909	55	00	12		660 00
"	"	"	J. Murphy	Dec.	18, 1852	Day lobby keep.	May	19, 1907	54	00	12		648 00
"	"	"	J. McClanaghan	May	14, 1860	Night lobby "	July	2, 1902	54	00	12		648 00
"	"	"	Alf. Trudeau	April	13, 1866	Freight hoist attendant.	Jan.	17, 1908	55	00	12		660 00
"	"	"	J. C. Thibault	Oct.	10, 1852	Messenger	Dec.	2, 1909	60	00	12		720 00
"	"	"	Ls. Bédard	Aug.	18, 1854	Carpenter	April	1, 1908	65	00	12		780 00
"	"	"	Alex. Vallée	Aug.	4, 1847	"	Aug.	4, 1910	55	00	12		660 00
"	"	"	Gilb. Robert	Dec.	18, 1852	Watchman	July	—, 1902	54	00	12		648 00
"	"	"	W. Pagé	Mar.	14, 1851	Cleaner	Nov.	—, 1898	46	00	12		552 00
"	"	"	Ls. Aubé	Mar.	—, 1857	"	July	11, 1898	46	00	12		552 00
"	"	"	C. Rochon	Jan.	18, 1850	"	Jan.	17, 1906	46	00	12		552 00
"	"	"	Ed. Baudette	Mar.	26, 1859	"	Oct.	18, 1904	46	00	12		552 00
"	"	"	N. Bissonnette	Mar.	28, 1852	"	May	19, 1907	46	00	12		552 00
"	"	"	P. Roy	Aug.	10, 1888	"	July	14, 1907	50	00	12		600 00
"	"	"	Jos. Laplante	Mar.	12, 1856	"	Dec.	12, 1907	46	00	12		552 00
"	"	"	Jos. Brunet	June	27, 1881	"	Oct.	7, 1908	50	00	12		600 00
"	"	"	D. Royer	July	30, 1843	Charwoman	June	1, 1887	23	00	12		276 00
"	"	"	A. Crochetiere	Sept.	29, 1859	"	Nov.	1, 1897	23	00	12		276 00
"	"	Postal Station "B"	T. Drolet	Mar.	11, 1852	Caretaker	Oct.	29, 1908	54	17	12		650 00
"	"	Postal Station "C"	N. Robillard	July	28, 1859	Cleaner	May	1, 1912	55	00	12		660 60
"	"	Postal Station "D"	J. H. Roy	June	24, 1862	"	Sept.	1, 1900	50	00	12		600 00
"	"	Inland Revenue	Louis St. Jean	Sept.	17, 1840	Fireman	Dec.	1, 1892	55	00	12		660 00
"	"	"	Thos. Gauthier	July	10, 1865	Cleaner	Jan.	14, 1908	46	00	12		552 00
"	"	Custom House	C. Daudelin	June	19, 1843	Caretaker	July	16, 1892	39	50	12		474 00
"	"	"	H. Valiquette	Dec.	30, 1871	Carpenter	Feb.	1, 1903	65	00	12		780 00
"	"	"	Art. Poirier	June	18, 1870	Asst. carpenter.	Oct.	5, 1909	60	00	12		720 00
"	"	"	G. Flannigan	May	23, 1862	Electrician	Sept.	13, 1906	65	00	12		780 00
"	"	"	A. Cunningham	April	15, 1878	Night fireman	Jan.	2, 1909	50	00	12		600 00
"	"	"	C. Girard			Cleaner	Oct.	28, 1910	50	00	12		600 00
"	"	"	F. X. Bernier	May	24, 1856	"	Oct.	28, 1910	50	00	12		600 00
"	"	"	J. Jasmin			"	Jan.	9, 1912	50	00	12		600 00
"	"	"	A. Langlois			"	Aug.	3, 1911	50	00	12		600 00
"	"	Custom House and ex. war'h	B. Lajeunesse	Nov.	20, 1861	Fireman	Nov.	23, 1896	60	00	12		720 00
"	"	Dominion buildings	Jos. Renaud	April	3, 1863	Painter	April	1, 1910	76	00	12		912 00
Montmagny	"	Public building	C. Normand	Mar.	11, 1846	Caretaker	Oct.	1, 1907	33	33	12		400 00

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on March 31, 1912.—*Continued.*

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time Employed each year.	Yearly Salary.
						$ cts.		$ cts.
Nicolet	Public building	U. Papillon	Mar. 16, 1843	Caretaker	Nov. 8, 1907	43 33	12 months	520 00
Nominingue	Immigration building	T. A. Christin	May 12, 1857	"	Mar. 20, 1908	25 00	12 "	300 00
Peribonka	" "	Ernest Roy	Dec. 14, 1877	"	Oct. 1, 1902	25 00	12 "	300 00
Pierreville	Public building	Mrs. S.G. Boucher, P.M.	May 7, 1853	"	Dec. 1, 1909	12 50	12 "	150 00
Plessieville	"	Geo. Savoie, P.M.	Feb. 14, 1856	"	Dec. 21, 1909	10 00	12 "	120 00
Quebec	Examining warehouse	D. P. Kennedy	Feb. 9, 1865	Engineer	April 1, 1897	75 00	12 "	900 00
"	" "	J. G. McLaughlin	Nov. 15, 1880	Fireman	July 4, 1906	60 00	12 "	720 00
"	Cullers office	James O'Neil	Aug. 15, 1861	"	Aug 1, 1894	45 00	12 "	540 00
"	Custom office	John R. Mountain	Nov. 1, 1848	"	Nov. 10, 1888	45 00	12 "	540 00
"	Post office	F. J. Cooper	July 8, 1858	"	June 15, 1895	75 00	12 "	900 00
Quebec	Post Office (St. Sauveur)	C. Turcotte	June 14, 1866	Caretaker	Jan. 8, 1907	12 50	12 "	150 00
"	"	A. Boulin	Jan. 5, 1856	Elevator man	Mar. 1, 1912	50 00	12 "	600 00
"	"	R. Roy	Sept. 23, 1878	Caretaker	Feb. 16, 1910	66 66	12 "	800 00
"	"	J. D. Villeneuve	Oct. 22, 1875	Messenger	April 17, 1907	50 00	12 "	600 00
"	Public buildings	A. Petitclerc	Oct. 18, 1865	Carpenter	Feb. 5, 1910	60 00	12 "	720 00
"	"	D. Lortie	Oct. 16, 1853	"	" 5, 1910	60 00	12 "	720 00
"	"	A. Lacasse	" 19, 1877	Electrician	July 7, 1910	75 00	12 "	900 00
"	Post Office (St. Rochs)	J. B. Turcotte	Sept. 22, 1860	Caretaker	May 7, 1910	41 66	12 "	500 00
"	Governor General Quart'rs	M. Lewis	May 6, 1871	"	Sept. 1, 1905	1 50	per day	547 50
Roberval	Immigration building	G. Audet	Nov. 18, 1849	"	May 31, 1907	25 00	12 months	300 00
Rimouski	Post Office	A. Lepage	Feb. 7, 1866	"	Jan. 1, 1901	25 00	12 "	300 00
Richmond	Public building	H. Desmarais	July 14, 1869	"	May 7, 1898	33 33	12 "	400 00
Sherbrooke	"	O. Deseve	Aug. 6, 1848	"	April 2, 1898	33 33	12 "	400 00
Sorel	Post office	C. Robitaille	Jan. 22, 1848	"	Sept. 1, 1897	40 00	12 "	480 00
St. Henri	Public building	Mrs. G. Colborn	Jan. 30, 1883	Charwoman	Jan. 9, 1912	23 00	12 "	276 00
St. Hyacinthe	"	F. A. Tetreault	Nov. 8, 1845	Caretaker	Mar. 1, 1912	43 33	12 "	520 00
"	Inland revenue	E. Clapin	April 9, 1844	"	July 19, 1904	33 33	12 "	400 00
St. Jean	Custom house	L. Forrant	Jan. 21, 1849	"	April 14, 1897	29 16	12 "	350 00
"	Post office	W. Brosseau, P.M.	Aug. 12, 1840	"	Mar. 25, 1909	25 00	12 "	300 00
St. Jerome	Public building	T. Grignon	Mar. 21, 1859	"	Dec. 1, 1911	33 33	12 "	400 00
St. Louis du Mile End	Post office	M. A. Campeau, P.M.	" 6, 1846	"	May 28, 1905	33 33	12 "	400 00
Terrebonne	Public building	J. Brière	Feb. 15, 1861	"	Nov. 1, 1911	25 00	12 "	300 00
Thetford Mines	Post office	J. Rousseau, P.M.	Dec. 22, 1859	"	July 1, 1905	12 50	12 "	150 00

Three Rivers	"	Public building	E. Cossette	July 7, 1857	"	May 13, 1911	50 00	12	"		600 00
"	"	"	Ph. Gravelle	June 3, 1828	Asst. Caretaker	Feb. 1, 1891	25 00	12	"		300 00
Valleyfield	"	"	J. B. Laniel	Oct. 20, 1862	Caretaker	Feb. 13, 1905	33 33	12	"		400 00
Victoriaville	"	"	G. Beaudet	Feb. 20, 1862	"	Mar. 3, 1904	10 00	12	"		120 00
Alexandria	Ont.	"	D. K. McDonald	July 4, 1847	"	Oct. 17, 1906	41 66	12	"		500 00
Almonte	"	Post office	P. Burns	Jan. 28, 1861	"	Sept. 1, 1907	33 33	12	"		400 00
Amherstburg	"	"	Mrs. R. Elliott	Dec. 28, 1854	"	June 6, 1905	33 33	12	"		400 00
Arnprior	"	Public building	R. Tait	Oct. 16, 1845	"	Dec. 1, 1909	33 33	12	"		400 00
Barrie	"	Post office	E. Sivigny	Mar. 19, 1847	"	May 1, 1903	33 33	12	"		400 00
Brockville	"	"	C. F. Gray	April 28, 1861	"	April 2, 1905	45 83	12	"		550 00
Brantford	"	"	John Squire	" 24, 1842	"	Oct. 27, 1880	50 00	12	"		600 00
Bridgeburg	"	Public building	Wm. Hanna	Aug. 15, 1863	"	" 3, 1905	29 16	12	"		350 00
Bowmanville	"	"	W. W. Allin	Jan. 13, 1850	"	Feb. 10, 1905	37 50	12	"		450 00
Belleville	"	Post office	S. Haight	Aug. 26, 1857	"	Jan. 24, 1901	54 16	12	"		650 00
Berlin	"	"	J. Clements	June 21, 1840	"	May 15, 1900	33 33	12	"		400 00
Brampton	"	"	J. Foster	Sept. 16, 1846	"	Aug. 1, 1906	33 33	12	"		400 00
Carleton Place	"	"	Jas. F. Halpenny	April 17, 1858	"	May 13, 1892	25 00	12	"		300 00
Chatham	"	"	W. W. Mitchell	May 25, 1848	"	Jan. 7, 1885	50 00	12	"		600 00
Cornwall	"	"	R. Conroy	Feb. 6, 1848	Caretaker, &c.	April 1, 1897	37 50	12	"		450 00
Cayuga	"	"	G. A. Gibson, P.M.	May 29, 1861	"	Sept. 3, 1891	4 16	12	"		50 00
Clinton	"	"	J. Scott, P.M.	Jan. 21, 1856	"	Feb. 9, 1904	16 66	12	"		200 00
Cobourg	"	"	W. Russell	Sept. 5, 1859	"	" 1, 1911	37 50	12	"		450 00
Deseronto	"	Public building	M. Hart	Jan. 15, 1862	"	July 1, 1903	41 66	12	"		500 00
Dundas	"	"	Wm. Graham, P.M.	Dec. 5, 1853	"	" 1, 1898	4 16	12	"		50 00
Fort William	"	"	D. J. McCallum	April 5, 1834	"	Sept. 21, 1904	45 83	12	"		550 00
Galt	"	"	T. Barrett	June 17, 1861	"	Aug. 1, 1902	41 66	12	"		500 00
Glencoe	"	"	E. Waterworth	Aug. 19, 1852	"	Feb. 28, 1910	33 33	12	"		400 00
Guelph	"	"	R. McLeod	July 30, 1865	"	May 25, 1901	41 66	12	"		500 00
Goderich	"	"	A. Chrystal	April 12, 1864	"	Jan. 1, 1912	37 50	12	"		450 00
Hamilton	"	Dominion building	Alfred Barnard	Dec. 27, 1847	"	Dec. 10, 1894	50 00	12	"		600 00
"	"	"	J. Wigglesworth	Aug. 7, 1863	Fireman	Oct. 1, 1896	60 00	12	"		720 00
"	"	"	Thomas Nicholson	Dec. 17, 1857	Engineer	Mar. 2, 1887	50 00	12	"		600 00
"	"	"	T. C. Butler	1876	Cleaner	June 10, 1911	50 00	12	"		600 00
"	"	"	C. Partridge	April 2, 1869	"	April 12, 1909	50 00	12	"		600 00
"	"	"	Mrs. C. White	" 16, 1857	"	Mar. 6, 1907	$1 per dy				315 00
Hawkesbury	"	Public building	A. Marleau	Sept. 22, 1857	Caretaker	Aug. 7, 1906	33 33	12	months		400 00
Ingersoll	"	"	John McDonald	June 30, 1841	"	Nov. 20, 1900	37 50	12	"		450 00
Kenora	"	"	Mrs. J. Link	May 10, 1850	"	Dec. 7, 1901	33 33	12	"		400 00
Kincardine	"	"	G. D. Morrison, P.M.	Nov. 14, 1860	"	May 17, 1910	20 83	12	"		250 00
Kingston	"	Post office	Jas. Kehoe	June 21, 1873	"	" 15, 1905	52 50	12	"		630 00
"	"	Inland revenue building	J. Lawless	1833	"	Feb. 8, 1908	41 66	12	"		500 00
"	"	" " "	P. Clark	May 23, 1860	Fireman	Nov. 1, 1909	15 00	12	"		180 00
"	"	Custom house	Mrs. J. Stanburg	June 27, 1868	Caretaker		16 66	12	"		200 00
Leamington	"	Public building	J. W. Ross	Aug. 8, 1860	"	May 8, 1911	37 50	12	"		450 00
London	"	Custom house	M. Mulkern	Sept. 4, 1837	"	Sept. 18, 1888	50 00	12	"		600 00
"	"	"	Wm. Greer	Oct. 12, 1839	"	Mar. 16, 1884	33 33	12	"		400 00
"	"	Post office	J. Gilbanks	Dec. 4, 1861	"	May 31, 1906	41 66	12	"		500 00
"	"	"	W. Service	Mar. 20, 1852	Engineer	Oct. 7, 1909	50 00	12	"		600 00
Lindsay	"	Post office and cust. house	Wm. J. Healey	May 29, 1873	Caretaker	Nov. 10, 1908	37 50	12	"		450 00
Markham	"	Public building	Chs. Wales	April 12, 1864	"	Aug. 9, 1909	50 00	12	"		600 00

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on March 31, 1912—*Continued.*

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time Employed each year.	Yearly Salary.
						$ cts.		$ cts.
Napanee. ..... "	Post office and cust. house	Mrs. C. E. Webster.....	July 12, 1846	Caretaker.....	Oct. 4, 1900	41 66	12 months....	500 00
Niagara Falls..... "	Public building.....	W. J. Brown.....	May 1, 1862	"	June 1, 1910	49 16	12 "	590 00
North Bay..... "	"	L. A. Gauthier.....	" 15, 1857	"	" 13, 1908	55 00	12 "	660 00
Orangeville..... "	"	D. McPherson	April 30, 1851	"	July 15, 1900	33 33	12 "	400 00
Orillia..... "	"	John Frawley.....	Mar. 14, 1844	"	Nov. 1, 1898	33 33	12 "	400 00
Oshawa..... "	"	A. Brodie	Sept. 28, 1850	"	Dec. 11, 1905	41 66	12 "	500 00
Ottawa..... "	Observatory	A. Villeneuve.....	Mar. 11, 1857	"	" 14, 1904	55 00	12 "	660 00
" ..... "	"	G. Sparks	Oct. 16, 1858	Engineer.....	Nov. 1, 1904	70 00	12 "	840 00
Owen Sound..... "	Public building.....	H. Wright.....	Nov. 24, 1841	Caretaker.....	Mar. 18, 1908	33 33	12 "	400 00
Paris..... "	"	Sam Lee.....	Oct. 24, 1841	"	July 7, 1902	33 33	12 "	400 00
Parkhill..... "	"	W. H. Taylor, P.M.....	Aug. 4, 1847	"	May 12, 1910	16 16	12 "	200 00
Pembroke..... "	Inland revenue building...	H. Church.	Nov. 15, 1864	"	Jan. 5, 1910	33 33	12 "	400 00
Peterborough..... "	Post office	G. Stenton.....	Sept. 17, 1847	"	Dec. 7, 1908	37 50	12 "	450 00
Peterborough..... Ont.	Custom house.....	B. McGill	April 4, 1854	Caretaker.....	Jan. 1, 1912	25 00	12 "	300 00
Petrolea..... "	Post office.....	James Shaw.....	June 11, 1842	"	Sept. 12, 1904	37 50	12 "	450 00
Picton..... "	Public building.....	N. Welsh.	Feb. 13, 1855	"	May 9, 1912	33 33	12 "	400 00
Port Arthur..... "	"	D. McKenzie.....	Sept. 12, 1843	"	" 14, 1906	45 83	12 "	550 00
Port Colborne..... "	Post office.....	Wm. Armstrong.....	" 9, 1846	"	June 11, 1888	33 33	12 "	400 00
Port Hope..... "	"	Jos. Curtis.....	 1884	"	May 1, 1905	37 50	12 "	450 00
Prescott..... "	"	R. Birks.....	April 6, 1822	"	" 1, 1899	37 50	12 "	450 00
Renfrew..... "	Public building.....	R. Sim.....	Feb. 10, 1839	"	" 11, 1909	33 33	12 "	400 00
Sandwich..... "	"	John McLeod.....	Sept. 14, 1883	"	July 22, 1907	29 00	12 "	350 00
Sarnia..... "	"	J. H. Dyble.....	Aug. 25, 1860	"	Nov. 7, 1903	45 83	12 "	550 00
Sault Ste. Marie..... "	"	P. J. Racine.....	Sept. 25, 1865	"	Sept. 25, 1905	37 50	12 "	450 00
Simcoe..... "	"	N. Porter.....	.....	"	Nov. 21, 1910	40 00	12 "	480 00
Smiths Falls..... "	"	R. W. Lewis.....	Aug. 19, 1863	"	Jan. 8, 1896	33 33	12 "	400 00
Stratford..... "	Post office, &c.....	J. P. Murray.....	July 29, 1850	Engineer.....	" 26, 1900	50 00	12 "	600 00
St. Catharines..... "	"	A. Clark.....	Sept. 14, 1860	Caretaker.....	Dec. 12, 1904	37 50	12 "	450 00
St. Mary's..... "	Public building.....	W. Hoyt.....	.....	"	Mar. 16, 1908	33 33	12 "	400 00
St. Thomas..... "	"	G. Luton.....	May 25, 1857	"	April 14, 1903	37 50	12 "	450 00
Strathroy..... "	"	N. Neitch	April 12, 1868	"	June 29, 1911	33 33	12 "	400 00
Toronto..... "	Dominion building.....	H. E. Hamilton.....	" 14, 1838	Superintendent..	April 10, 1902	100 00	12 "	1,200 00
" ..... "	Inland revenue building...	C. H. Baillie.....	Sept. 22, 1852	Fireman.....	Jan. 13, 1891	50 00	12 "	600 00
" ..... "	Custom house.....	R. Eyre.....	Oct. 11, 1849	"	Mar. 15, 1895	62 50	12 "	750 00

"	"	"	T. J. Enright	"	—, 1862	Caretaker	Dec.	18, 1906	50 00	12	"		600 00
"	"	"	W. J. Murphy	Sept.	16, 1868	Cleaner	Sept.	28, 1905	54 16	12	"		650 00
"	"	"	H. Somers	May	—, 1851	"	Mar.	3, 1907	54 16	12	"		650 00
"	"	"	Wm. Stringer	Jan.	22, 1881	"	Oct.	—, 1905	54 16	12	"		650 00
"	"	Examining warehouse	James Cosgrove	Feb.	10, 1844	Engineer	"	28, 1874	79 16	12	"		950 00
"	"	" "	Ed. Appleton	Sept.	26, 1864	Fireman	Sept.	23, 1886	66 66	12	"		800 00
"	"	" "	J. Jennings	"	1, 1867	Hoist attendant	May	25, 1907	58 33	12	"		700 00
"	"	" "	R. C. Cussack	Mar.	26, 1875	"	Sept.,	1907	58 33	12	"		700 00
"	"	" "	F. Simpson	Jan.	8, 1859	Watchman	"	1, 1903	58 33	12	"		700 00
"	"	" "	Thos. Jones	Nov.	10, 1853	"	April	4, 1902	58 33	12	"		700 00
"	"	" "	Wm. Scott	———	—, 1838	"	June	1, 1905	2 00	p.d.			730 00
"	"	" "	J. Gormally	Nov.	26, 1872	Hoist attendant	Oct.	31, 1901	58 33	12	months		700 00
"	"	Union Station	Jas. Cashin	June	28, 1866	Elevator man	July	25, 1906	58 33	12	"		700 00
Toronto	"	Post office	J. Somers	April	8, 1835	Fireman	Oct.	9, 1897	62 50	12	"		750 00
"	"	"	P. Cassidy	May	2, 1862	"	May	8, 1906	62 50	12	"		750 00
"	"	"	T. Letray	———	—1858	"	"	10, 1907	62 50	12	"		750 00
"	"	"	W. J. Graham	Mar.	16, 1840	Carpenter	Oct.	16, 1896	66 66	12	"		780 00
Junction	"	"	J. Devins	July	18, 1847	Caretaker	Feb.	3, 1905	45 00	12	"		540 00
"	"	General post office	W. Gribble	Mar.	7, 1860	Cleaner	"	—, 1905	58 33	12	"		700 00
"	"	"	F. Edwards	May	20, 1872	"	July	18, 1904	54 16	12	"		650 00
"	"	"	Chas. Gregory	July	27, 1857	"	Feb.	—, 1905	54 16	12	"		650 00
"	"	"	A. E. Hulis	"	8, 1881	"	May	1, 1906	54 16	12	"		650 00
"	"	"	Jno. Cotton,	"	31, 1864	"	Feb.	17, 1908	54 16	12	"		650 00
"	"	"	Geo. McCallum	"	8, 1868	"	"	17, 1909	54 16	12	"		650 00
"	"	"	Thos. Russell	April	27, 1876	"	Oct.	20, 1909	54 16	12	"		650 00
"	"	Postal station "A"	E. Tooze	Dec.	8, 1865	Elevatorman	Dec.	15, 1909	58 33	12	"		700 00
"	"	" "A"	O. Johnston	July	18, 1874	"	Feb.	14, 1910	58 33	12	"		700 00
"	"	and examing warehouse	L. Deas	Jan.	15, 1854	Cleaner	July	—, 1907	54 16	12	"		650 00
"	"	Postal station "C"	Jas. Rea	Feb.	17, 1864	Caretaker	Jan.	12, 1884	45 00	12	"		540 00
"	"	" "F"	J. W. Thornton	April	11, 1867	Cleaner	April	7, 1907	54 16	12	"		650 00
"	"	Public building	A. W. Charlton	Mar.	19, 1870	Electrician	Dec.	1, 1911	66 66	12	"		800 00
Trenton		"	A. W. Smith	Nov.	7, 1844	Cleaner	May	31, 1910	37 50	12	"		450 00
Walkerton	"	"	Mrs. T. Gibson	Jan.	21, 1861	"	"	12, 1905	33 33	12	"		400 00
Welland	"	"	D. McIlvride	May	16, 1876	Caretaker	June	9, 1910	41 66	12	"		500 00
Whitby		"	Alex. Whitelaw	April	30, 1840	"	Sept.	1, 1910	37 50	12	"		450 00
Windsor	"	Post office	I. Belleperche	Oct.	26, 1848	Engineman	Dec.	24, 1897	54 16	12	"		650 00
"	"	"	W. Curtis	Mar.	6, 1844	Caretaker	Nov.	9, 1880	37 50	12	"		450 00
Wingham	"	Public building	P. Fisher, P.M	Dec.	12, 1832	"	"	19, 1906	16 66	12	"		200 00
Woodstock	"	"	Robt. Kerr	June	6, 1864	Engineer	Dec.	11, 1901	41 66	12	"		500 00
Brandon	Man.	Armoury	T. Giles	Mar.	30, 1843	Fireman	Aug.	1, 1897	65 00	12	"		780 00
Dauphin	"	Public building	G. Broadfoot	Jan.	1, 1853	Caretaker	Jan.	1, 1911	45 00	12	"		540 00
Emerson	"	"	Chas. Thain	July	17, 1880	"	Sept.	1, 1910	41 66	12	"		500 00
Neepawa	"	"	John Stevens	Jan.	10, 1863	"	Nov.	1, 1909	65 00	12	"		780 00
Portage la Prairie	"	"	J. S. Telfer	July	25, 1840	Fireman	July	1, 1904	45 00	12	"		540 00
Selkirk	"	"	W. Kidd	May	11, 1879	"	Mar.	1, 1909	55 00	12	"		660 00
St. Boniface	"	"	J. A. S. Chausse	Aug.	20, 1867	"	Oct.	1, 1908	55 00	12	"		660 00
Winnipeg	"	Custom house	W. Harrington	Sept.	18, 1871	Caretaker	Sept.	29, 1908	60 00	12	"		720 00
"	"	"	J. E. Webster	June	24, 1877	Fireman	Sept.	25, 1911	60 00	6	"		360 00
"	"	New Post office	Jos. Hay	May	4, 1853	Engineer	July	20, 1905	90 00	12	"		1,080 00
"	"	"	G. Buckanan	April	6, 1862	Fireman	Nov.	20, 1911	70 00	12	"		840 00

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on March 31, 1912—*Continued.*

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time Employed each year.	Yearly Salary.
						$ cts.		$ cts.
Winnipeg..... Man.	New post office.....	J. Waterson.....	April 1, 1882	Fireman.....	Jan. 31, 1912	70 00	12 months....	840 00
" ..... "	"	N. Thorarinson.....	Feb. 10, 1874	Elevatorman...	July 10, 1908	65 00	12 "	780 00
" ..... "	"	A. R. Bush.....	Mar. 18, 1872	"	" 15, 1909	65 00	12 "	780 00
" ..... "	"	F. Jenkins.....	Feb. 21, 1874	"	" 10, 1908	65 00	12 "	780 00
" ..... "	"	Thos. McMaighan	Oct. 10, 1879	"	Nov. 23, 1908	65 00	12 "	780 00
" ..... "	"	Mrs. M. Pugsley.....	" 13, 1857	Cleaner.....	Sept. 19, 1908	95 00	12 " ...	1,140 00
" ..... "	"	Mrs. E. Fentrell.....	July 15, 1860	"	April 17, 1910	74 00	12 "	988 00
" ..... "	"	Mrs. E. J. Buck.....	Dec. 24, 1861	"	Sept. 1, 1909	24 00	12 " ..	288 00
" ..... "	"	W. J. Smith.....	Mar. 27, 1863	Caretaker	Mar. 31, 1910	65 00	12 "	780 00
" ..... "	Postal station "B".....	John Lamb.....	Nov. 6, 1849	"	May 16, 1908	60 00	12 "	720 00
" ..... "	Public building.....	A. H. Latour.....	Mar. 25, 1876	Electrician	Sept. 16, 1908	100 00	12 "	1,200 00
" ..... "	New examining warehouse.	Wm. Clark.....	Oct. 8, 1868	Engineer	July 1, 1908	85 00	12 "	1,020 00
" ..... "	" " ..	T. Sunders..	" 25, 1848	Fireman	Nov. 23, 1908	70 00	12 "	840 00
" ..... "	" " ..	J. Fontaine.....	April 26, 1866	Elevatorman....	May 19, 1908	65 00	12 "	780 00
" ..... "	New examining warehouse.	J. Knott.....	Jan. 21, 1864	Elevatorman....	Oct. 6, 1910	65 00	12 "	780 00
" ..... "	" "	John Kennedy.....	April 1, 1867	Fireman.....	" 6, 1910	65 00	12 "	780 00
" ..... "	" "	S. B. Jeffery.....	" 9, 1878	Caretaker.....	" 6, 1910	80 00	12 "	960 00
" ..... "	" "	S. E. Stoddart.....	.....	Fireman.....	Feb. 14, 1912	65 00	12 "	780 00
" ..... "	Old post office.....	M. McIvor.....	Nov. 12, 1867	"	Oct. 15, 1909	75 00	12 "	900 00
" ..... "	"	Joseph Coutu.....	May 10, 1843	Hoist attendant.	Mar. 16, 1887	65 00	12 "	780 00
" ..... "	"	A. Boiteau.....	Sept. 23, 1860	Night watchman	April 4, 1905	60 00	12 "	720 00
" ..... "	Public buildings	Wm. Johnson.....	June 14, 1867	Carpenter	Sept. 1, 1906	75 00	12 " ...	780 00
" ..... "	Immigration building..	P. C. Devey.....	July 10, 1877	Elevatorman....	Feb. 9, 1912	65 00	12 "	900 00
Calgary ..... Alta.	Post office.....	J. G. Adamson.....	May 21, 1872	Caretaker.....	June 6, 1907	75 00	12 "	900 00
" ..... "	"	J. Marshall.....	Jan. 6, 1870	Elevatorman....	Aug. 20, 1911	50 00	12 "	600 00
" ..... "	"	A. W. Barber	Dec. 17, 1860	Asst. caretaker..	April 22, 1910	75 00	12 "	900 00
Edmonton..... "	"	E. G. Henry.....	Mar. 30, 1873	Caretaker.....	Mar. 9, 1907	75 00	12 "	900 00
" ..... "	New post office.....	R. L. Haskill.....	Nov. 3, 1850	"	Oct. 20, 1909	75 00	12 " ..	900 00
" ..... "	"	C. Nevezas;.....	Sept. 13, 1877	Asst. caretaker..	" 20, 1909	70 00	12 " ...	840 00
" ..... "	"	F. Stone.....	June 26, 1885	Fireman.....	May 22, 1911	70 00	12 "	840 00
" ..... "	"	T. Greaves.....	Nov. 1, 1850	Elevatorman....	" 19, 1910	60 00	12 "	720 00
" ..... "	Dominion Lands.....	J. Duggan.....	April 19, 1871	Caretaker.....	Nov. 27, 1909	25 00	12 " ..	300 00
Lethbridge ..... Alta.	Public building..	W. C. Norman.....	Feb. 7, 1876	"	Dec. 14, 1909	50 00	12 "	600 00
Medicine Hat..... "	"	W. McEvans.....	.....	"	June 1, 1911	70 00	12 "	840 00

Red Deer	"	Court house, &c	S. M. Bannerman	July	12, 1835	"	July	20, 1905	55	00	12	"		660 00
Battleford	Sask.	"	E. M. Webb	"	26, 1875	"	Jan.	17, 1912	45	00	12	"		540 00
Esteven	"	Public building	R. Murray	Sept.	27, 1856	"	May	23, 1910	45	00	12	"		540 00
Maple Creek	"	"	W. A. Douglass, P.M.	Feb.	27, 1856	"	June	25, 1909	16	66	12	"		200 00
Moosejaw	"	"	R. West	Sept.	12, 1855	"	Sept.	21, 1906	54	16	12	"		650 00
Prince Albert	"	"	R. D. Robertson	Aug.	18, 1877	"	Jan.	15, 1906	75	00	12	"		900 00
"	"	"	F. Ferdinando	Jan.	17, 1886	Fireman	"	1, 1910	60	00	12	"		720 00
Regina	"	Land office	W. J. Gore	July	22, 1863	Caretaker	May	6, 1901	50	00	12	"		600 00
"	"	"	T. Perkins	Sept.	14, 1852	"	Sept.	24, 1906	50	00	12	"		600 00
"	"	Post office	John Macolmson	Nov.	9, 1857	"	"	5, 1906	60	00	12	"		720 00
"	"	"	T. Jackson	June	28, 1879	Fireman	Jan.	13, 1909	55	00	12	"		660 00
"	"	"	Mrs. M. Sonoski	May	3, 1876	Charwoman	Nov.	5, 1909	40	00	12	"		480 00
Saskatoon	"	Public building	W. Tyrie	Dec.	15, 1864	Caretaker	Jan.	7, 1911	75	00	12	"		900 00
Yorkton	"	"	G. Fehrenback	"	21, 1844	"	Feb.	25, 1910	45	00	12	"		540 00
Atlin	B. C.	"	J. A. Fraser	Jan.	1, 1851	"	June	26, 1901	12	50	12	"		150 00
Cumberland	"	"	T. Cook	May	29, 1844	"	July	7, 1910	54	16	12	"		650 00
Fernie	"	Post Office	R. H. McEwan	Dec.	13, 1857	"	Jan.	21, 1910	70	00	12	"		840 00
Kamloops	"	"	W. W. Taylor	Jan.	31, 1853	"	Dec.	9, 1910	50	00	12	"		600 00
Ladysmith	"	"	Robt. Bell	Feb.	29, 1840	"	April	1, 1909	50	00	12	"		600 00
Nanaimo	"	Public building	J. Thompson	Sept.	2, 1836	"	May	1, 1897	60	00	12	"		720 00
"	"	"	M. Smith	April	7, 1863	Asst. caretaker	July	29, 1911	50	00	12	"		600 00
Nelson	"	"	W. Lynch	July	18, 1853	Elevatorman	June	1, 1911	50	00	12	"		600 00
New Westminster	"	Post Office	L. Thornbar	April	4, 1846	"	July	11, 1906	54	16	12	"		650 00
"	"	Indian, &c., building	A. H. Oakley	April	26, 1864	"	Feb.	2, 1909	50	00	12	"		600 00
Rossland	"	Post Office	H. McQuade	Dec.	24, 1851	"	Aug.	1, 1906	50	00	12	"		600 00
Vancouver	"	New public building	G. Wilson	June	4, 1836	"	Oct.	8, 1909	60	00	12	"		720 00
"	"	" "	W. J. Chisholm	Sept.	18, 1893	"	Feb.	14, 1910	60	00	12	"		720 00
"	"	" "	Jas. Mulvaney	Dec.	18, 1885	Cleaner	Mar.	1, 1910	60	00	12	"		720 00
"	"	" "	John Dunsmuir	Nov.	16, 1858	"	Jan.	10, 1910	70	00	12	"		840 00
"	"	" "	D. Inches	Dec.	9, 1856	Engineer	Feb.	1, 1909	95	00	12	"		1,140 00
"	"	" "	Geo. Small	June	22, 1855	Cleaner	June	13, 1910	70	00	12	"		840 00
"	"	" "	Thos. A. Smith	Oct.	18, 1870	"	Feb.	1, 1911	70	00	12	"		840 00
"	"	" "	F. Patterson	Sept.	8, 1859	"	Aug.	1, 1910	60	00	12	"		720 00
"	"	" "	J. McCourt	Sept.	15, 1865	"	Nov.	1, 1911	70	00	12	"		840 00
"	"	" "	M. Churchill	June	13, 1854	"	Oct.	1, 1911	65	00	12	"		780 00
"	"	" "	A. J. Chisholm	April	18, 1851	Caretaker	Oct.	1, 1903	75	00	12	"		900 00
Victoria	"	New Dominion building	Wm. McKay	Dec.	31, 1857	"	Feb.	4, 1898	50	00	12	"		600 00
"	"	" "	T. Campbell	June	24, 1848	Asst. caretaker	Oct.	1, 1906	70	00	12	"		840 00
"	"	" "	John Cragg	Jan.	18, 1856	Fireman			65	00	12	"		780 00
"	"	" "	W. Robinson	July	4, 1848	Elevatorman	Sept.	1. 1907	60	00	12	"		720 00
"	"	" "	F. T. McIlmoyle	Dec.	24, 1884	"	Aug.	1, 1907	60	00	12	"		720 00
"	"	" "	C. Minkles	June	27, 1852	Cleaner	Dec.	20, 1909	70	00	12	"		840 00
"	"	" "	W. Dick	———	1854	Fireman	Oct.	1, 1908	70	00	12	"		840 00
"	"	Old custom house	Geo. Lyoll	Feb.	12, 1843	Caretaker	May	8, 1900	60	00	12	"		720 00
"	"	Old post office	W. J. Bowden	Mar.	25, 1866	"	Oct.	1, 1908	20	00	12	"		240 00
Dawson	"	Post office	E. Lemieux	Oct.	21, 1881	"	Sept.	19, 1907	160	00	12	"		1,920 00
"	"	"	J. K. Johnstone	April	17, 1883	Nightman	Oct.	17. 1904	160	00	12	"		1,920 00
"	"	Administration building	Jos. Pelland	Mar.	11, 1882	Charman	Oct.	1, 1909	160	00	12	"		1,920 00
"	"	" "	J. Boutin	Oct.	13, 1876	Caretaker	Dec.	1, 1901	160	00	12	"		1,920 00
"	"	" "	Mde A. Misner	Sept.	6, 1860	Charwoman	Dec.	1, 1901	150	00	12	"		1,800 00

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on March 31, 1912— *Concluded.*

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time Employed each year.	Yearly Salary.
						$ cts.		$ cts.
Dawson ..... "	Administration Building..	S. S. Comee	Aug. 9, 1853	Nightman	Sept. 16, 1908	160 00	12 months....	1,920 00
" ..... "	" " ..	J. Ballentine.....	Mar. 16, 1866	Fireman.....	Jan. 1, 1907	160 00	12 "	1,920 00
" ..... "	Commissioner's residence..	N. P. McDonald.....	Oct. 8, 1879	Caretaker.....	Dec. 1, 1905	160 00	12 "	1,920 00
" ..... "	" " ..	W. Harkan.....	Mar. 16, 1848	Nightman	Oct. 1, 1905	160 00	12 "	1,920 00
" ..... "	" " ..	Mrs. Ida Joitke.....	April 27, 1858	Charwoman.....	Oct. 1, 1908	100 00	12 "	1,200 00
" ..... "	Police court	J. B. Deslauriers.....	July 12, 1875	Caretaker.....	June 1, 1906	160 00	12 "	1,920 00
" ..... "	Court house	H. DeVilliers.....	May 7, 1872	"	May 21, 1902	160 00	12 "	1,920 00
White Horse..... "	Public building.....	C. J. MeLennan.....	Dec. 22, 1850	"	Oct. 30, 1902	125 00	12 "	1,500 00

JOS. VINCENT.

TABLES

OF

EXPENDITURE AND REVENUE

BY YEARS

1882 TO 1912

COMPILED BY

T. N. DOODY

PUBLIC BUILDINGS—COST OF CONSTRUCTION AND REPAIRS, BY PROVINCES.

Year.	Nova Scotia.	P. E. I.	New Brunswick.	Quebec.	Ontario.	Manitoba.	N. W. T.	British Columbia.	Yukon.	Generally.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Before Confederation				862,302 03	3,321,158 86						4,183,460 89
1867 to 1882	164,110 00	75,253 68	1,248,672 00	1,747,702 46	3,157,545 30	326,247 47	228,135 40	260,473 98		104,633 33	7,312,773 62
1883	19,387 00	2,895 43	76,923 59	156,863 73	457,384 72	112,013 30	18,665 67	27,658 84		10,255 01	882,047 29
1884	31,702 70	5,170 08	114,916 84	325,918 84	678,080 79	239,452 73	43,526 37	36,085 99		53,564 66	1,528,419 00
*1885	69,557 97	23,211 35	98,106 36	284,536 94	478,519 51	144,575 51	62,575 81	36,723 42		13,492 03	1,211,298 90
1886	104,564 40	71,437 97	96,955 86	246,099 55	576,891 80	131,572 88	92,676 63	16,666 67		12,725 62	1,349,591 38
1887	67,044 72	44,566 77	63,351 69	211,750 81	553,164 29	106,264 90	161,910 22	37,806 90		11,550 98	1,257,411 28
1888	23,098 07	14,495 48	29,293 11	194,711 92	638,935 27	79,841 13	167,277 50	24,286 29		245 01	1,172,183 78
1889	25,435 07	1,812 17	19,679 30	289,414 03	706,772 00	78,490 13	147,998 26	17,099 08		964 57	1,287,664 61
1890	37,375 54	1,649 11	15,671 68	107,982 23	579,734 65	61,168 32	158,736 60	53,206 12			1,015,524 25
1891	29,811 29	3,114 98	11,618 32	103,260 04	440,444 27	58,239 44	128,753 75	51,906 49		1,141 23	828,289 81
1892	14,110 45	3,420 73	15,768 29	88,625 86	276,331 61	25,967 09	49,762 42	55,276 05		67 79	529,330 29
1893	41,006 04	1,190 25	89,874 33	155,029 10	355,421 87	32,328 89	56,285 54	112,514 22		21 78	843,672 02
1894	60,540 38	2,523 69	139,320 94	118,606 94	251,335 81	40,944 73	86,714 76	136,219 48			836,207 33
1895	45,807 24	1,095 50	52,386 04	93,330 86	256,281 91	21,838 68	69,826 02	37,148 49			577,714 74
1896	60,429 32	825 37	27,916 18	51,296 92	155,819 76	18,012 09	14,501 03	70,555 25			399,355 92
1897	100,661 32	1,375 10	6,498 08	57,728 65	225,475 13	12,052 40	13,497 08	110,234 68			527,522 44
1898	91,519 03	1,895 27	8,168 13	74,236 08	347,848 29	26,957 79	15,630 86	68,188 93			634,444 38
1899	86,664 60	453 50	2,673 40	50,884 25	317,342 74	6,507 45	7,713 19	31,672 09			503,911 22
1900	83,319 09	1,826 52	29,122 86	80,215 74	393,037 43	7,616 75	30,304 53	75,756 04	85,871 78		787,070 74
1901	43,058 40	1,555 42	34,074 88	128,659 57	441,768 16	8,481 76	42,488 25	124,636 40	88,948 52	39 05	913,710 41
1902	81,455 68	1,969 88	60,716 09	210,676 48	652,093 17	10,301 66	30,610 11	180,945 11	244,051 07		1,472,819 25
1903	95,262 11	1,235 33	38,521 19	145,273 25	530,400 48	22,394 03	48,882 83	98,548 48	8,999 04		989,516 74
1904	89,642 13	12,438 26	43,672 39	186,744 08	721,233 84	51,697 14	74,675 75	117,955 31			1,298,058 90
1905	145,433 25	11,117 83	92,616 92	374,921 90	1,221,177 91	308,902 13	128,795 57	71,467 41	6,065 58		2,360,498 50
1906	165,113 36	19,052 39	107,395 24	308,949 18	1,557,608 70	521,506 77	193,554 79	136,797 91			3,009,978 34
1907	132,043 61	8,845 20	45,860 66	202,766 45	1,263,394 32	193,447 42	128,756 09	135,839 38			2,110,953 13
1908	100,898 59	7,690 58	36,134 58	582,530 19	1,818,729 68	293,521 27	386,400 02	173,545 36	3 50		3,399,453 77
1909	181,038 84	11,338 12	60,754 47	1,338,893 83	1,881,867 66	464,051 43	365,694 57	424,809 60	24,135 77		4,752,584 29
1910	93,509 62	7,775 14	26,574 07	434,034 66	1,185,157 12	206,876 13	238,223 08	156,836 08	10,580 13		2,359,566 03
1911	101,955 20	17,289 73	67,426 14	223,246 39	1,033,583 80	95,433 22	210,496 41	146,488 58	434 00	41 80	1,896,395 27
1912	82,812 42	14,623 48	273,831 45	443,386 16	1,440,355 17	91,092 25	252,738 21	279,283 00	4,375 00		2.882,497 14
Total	2,468,368 04	373,144 31	3,034,495 08	9,880,579 12	27,914,896 02	3,797,796 89	3,655,807 32	3,306,631 63	473,464 39	208,784 66	55,113,925 66

* To 1885 amount contributed by Municipalities was $20,047.80.

EXPENDITURE ON PUBLIC BUILDINGS, MAINTENANCE BY PROVINCES.

Year.	Nova Scotia.	P. E. I.	New Brunswick.	Quebec.	Ontario.	Manitoba.	N. W. T.	British Columbia.	Yukon.	Generally.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Before Confederation	Cost of Rep	airs included	in general E	xpenditure o	n Buildings.						
1867 to 1882	64,817 31	19,879 55	46,825 90	353,308 05	2,497,058 41	53,194 16	6,808 65	14,051 21	.....	667 05	3,056,610 29
1883	1,100 54	755 78	5,123 15	8,192 61	112,848 02	2,880 00	.....	92 00	.....	.....	130,992 10
1884	3,691 40	2,191 81	9,274 87	14,652 47	119,876 95	2,832 50	96 00	658 74	.....	375 19	153,649 93
1885	3,624 45	1,957 57	8,305 69	18,837 38	119,715 02	2,899 00	620 00	1,590 74	.....	611 97	158,161 82
1886	4,457 34	2,418 11	9,219 14	16,155 09	155,335 77	2,903 18	1,647 17	1,692 87	.....	1,484 30	195,312 97
1887	9,669 31	3,583 87	14,629 03	24,455 49	153,293 34	3,246 87	1,617 49	2,711 36	.....	1,648 99	214,855 75
1888	12,860 20	4,547 06	17,289 21	35,468 80	163,852 41	6,751 23	3,997 60	2,930 63	.....	13,892 49	261,589 63
1889	13,075 00	4,861 80	17,743 34	32,635 34	174,437 27	9,085 34	1,914 45	2,957 67	.....	13,171 94	269,882 15
1890	13,115 81	4,520 66	17,919 46	34,423 15	183,857 77	9,807 26	5,934 19	3,263 38	.....	15,266 32	288,108 00
1891	14,668 64	4,664 58	18,551 76	36,138 08	186,312 32	10,452 22	12,459 78	3,324 01	.....	16,169 39	302,740 78
1892	15,389 02	5,112 91	17,955 24	37,209 36	181,362 77	14,263 77	13,418 46	3,942 59	.....	20,449 98	309,104 10
1893	16,144 68	4,683 56	15,213 70	41,044 27	193,580 19	12,174 23	8,369 29	3,928 03	.....	3,632 76	298,770 71
1894	18,282 21	4,847 93	21,577 66	45,460 10	210,616 86	18,457 95	8,871 82	8,959 00	.....	5,041 04	342,114 57
1895	22,441 45	5,176 84	20,110 08	49,145 48	214,204 42	13,290 99	12,381 57	9,347 45	.....	2,633 82	348,732 10
1896	18,875 85	4,221 25	18,747 98	51,394 28	207,875 38	12,289 95	10,243 64	9,334 19	.....	3,419 39	336,401 91
1897	20,359 56	4,735 22	19,611 18	50,758 32	197,920 18	15,887 87	13,819 94	10,121 39	.....	5,153 23	338,366 89
1898	21,187 62	4,649 17	19,138 47	46,373 58	196,225 91	15,569 96	13,189 03	11,281 65	.....	7,116 81	334,732 20
1899	21,305 98	4,964 51	19,759 06	51,403 69	198,048 09	13,833 00	13,386 46	10,439 14	.....	12,747 23	345,887 16
1900	19,759 47	5,024 26	20,659 03	49,631 50	184,429 74	15,652 25	12,655 71	13,154 48	41,153 66	13,614 58	375,734 68
1901	23,593 92	5,293 77	19,765 79	52,742 14	187,842 48	15,982 21	13,560 90	15,463 69	38,805 28	16,651 11	389,701 29
1902	26,246 34	5,625 95	23,136 93	69,506 94	246,547 87	17,643 28	14,205 76	16,544 28	127,801 75	20,310 36	567,569 46
1903	30,577 02	6,330 94	24,100 13	83,286 61	278,850 62	20,055 01	18,365 86	24,410 04	44,453 27	19,059 36	549,488 86
1904	30,198 20	6,485 83	25,834 29	89,471 62	293,439 26	23,587 84	22,482 16	25,642 73	53,675 28	21,405 86	592,223 07
1905	31,313 03	6,062 01	28,099 73	97,692 90	350,963 56	24,616 46	24,975 27	27,533 09	91,063 08	24,600 02	706,917 15
1906	34,113 18	6,518 75	30,602 67	110,668 18	359,692 61	30,023 40	26,433 08	27,462 46	78,293 86	29,697 06	733,505 25
1907	26,675 54	5,618 82	26,229 73	95,606 33	363,431 53	22,074 50	24,197 25	22,356 29	63,659 06	23,911 51	673,760 56
1908	37,868 36	7,147 69	32,508 67	142,205 51	489,075 55	37,371 63	41,826 08	30,205 99	74,255 60	39,982 55	932,447 63
1909	44,659 61	7,614 28	39,490 73	162,226 02	569,819 68	51,918 80	54,466 70	41,745 52	82,497 37	38,263 70	1,092,702 41
1910	50,745 00	9,194 51	45,829 45	164,509 60	584,608 85	55,038 17	61,408 50	45,348 25	79,974 76	42,364 48	1,139,021 57
1911	48,691 48	8,550 33	42,051 85	161,997 68	619,597 00	67,814 93	72,336 42	53,598 20	75,540 07	44,092 55	1,194,270 51
1912	46,550 96	8,852 15	46,936 61	162,345 74	682,136 50	69,369 85	83,618 74	60,612 54	56,764 13	41,642 58	1,258,829 80
Total	746,058 48	176,091 47	722,240 53	2,388,946 31	10,676,856 33	670,967 81	599,305 97	504,703 61	907,937 17	499,077 62	17,892,185 30

EXPENDITURE ON HARBOURS, PIERS, WHARVES, BREAKWATERS, &c., BY PROVINCES.

Year.	Nova Scotia.	P. E. I.	New Brunswick.	Quebec.	Ontario.	Manitoba.	N. W.T.	British Columbia.	Yukon.	Generally.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
To Confederation.	.....	224,381 02	.....	1,366,378 66	855,139 53	.....	.....	.....	.....	.....	2,445,899 21
1867 to 1882.....	906,491 69	355,696 80	589,538 80	[a]1,879,424 47	[b]1,607,183 00	223 39	.....	84,494 77	.....	6,083 35	5,429,136 27
1883.....	81,657 23	33,164 21	63,760 19	161,991 23	249,925 86	13,654 07	5,823 23	3,069 74	.....	8,685 89	621,731 64
1884..	70,325 15	15,382 90	85,665 45	207,792 52	492,013 74	14,650 31	14,000 00	18,202 91	.....	10,819 86	928,852 84
1885.....	46,417 72	64,849 80	47,242 34	216,850 72	393,664 16	10,820 28	6,567 00	52,146 34	.....	5,607 18	844,165 55
1886.....	24,314 90	47,567 85	38,232 09	139,557 72	227,492 38	4,241 57	6,515 92	369,748 28	.....	6,893 11	864,563 82
1887.....	59,409 39	11,315 24	84,635 29	195,312 37	136,488 81	7,547 39	15,181 61	223,839 30	.....	8,663 62	742,393 02
1888.....	151,534 80	13,707 55	34,296 60	184,719 15	240,557 57	3,637 83	11,282 37	126,988 11	.....	18,975 21	785,699 19
1889.....	96,793 81	14,172 76	54,178 77	203,063 92	356,144 43	2,456 80	.....	73,569 70	.....	22,848 64	823,228 83
1890.....	53,213 30	10,717 56	71,494 05	[c]3,077,925 88	392,055 30	2,982 30	.....	76,855 16	.....	24,261 03	3,709,504 58
1891.....	82,471 58	14,367 52	81,453 84	360,134 20	512,867 69	5,372 60	3,357 55	69,207 51	.....	9,399 96	1,138,632 45
1892.....	106,767 45	14,016 22	109,379 55	202,293 23	324,058 94	2,211 98	2,794 59	76,410 85	.....	6,936 42	844,869 23
1893.....	92,488 74	12,148 87	64,633 91	144,684 85	215,709 45	370 04	.....	98,602 58	.....	4,093 67	632,732 11
1894.....	100,952 19	34.608 86	43,754 65	168,550 36	162,534 68	525 41	15 60	103,838 77	.....	9,216 66	623,997 18
1895.....	77,373 19	23,576 35	37,275 46	190,607 86	154,285 39	1,908 74	353 55	83,624 81	.....	3,102 52	572,107 87
1896.....	38,403 58	15,315 16	16,595 32	205,973 11	79,052 07	6,110 16	776 75	39,722 66	.....	2,654 51	404,603 32
1897.....	55,168 38	28,141 96	24,194 03	74,905 19	29,733 16	966 68	1,063 34	36,302 93	.....	3,401 19	253,876 86
1898...	84,607 90	36,420 23	24,435 08	124,799 65	80,202 43	2,343 58	.....	104,090 06	14,000 00	4,949 42	475,848 35
1899.....	107,486 96	29,783 70	38,494 68	156,822 15	117,429 16	673 10	69 55	86,278 79	[d] 15,445 85	5,003 83	557,487 77
1900..	136,325 35	17,746 68	47,666 52	181,577 23	185,584 04	25,252 71	1,805 10	71,241 82	61,750 96	5,148 36	734,098 23
1901.....	223,504 40	30,255 57	101,949 71	,354,602 99	421,559 91	52,777 73	2,492 70	106,585 03	57,166 41	6,928 06	1,357,822 51
1902.....	199,798 71	46,352 71	150,612 09	578,159 08	475,591 08	19,745 33	....	68,246 05	55,080 54	9,932 69	1,603,518 28
1903.....	184,932 52	48,649 08	153,908 14	1,244,550 36	552,829 85	85,595 91	.....	68,304 15	26,852 18	9,914 51	2,375,536 70
1904.....	269,102 60	47,088 97	126,914 23	1,427,560 74	603,073 03	30,349 05	.....	108,844 09	9,569 22	8,547 73	2,631,049 66
1905.....	395,762 81	31,590 97	188,623 02	1,020,169 14	691,040 02	29,915 67	1,517 06	119,627 66	6,291 13	8,833 76	2,493,371 24
1906.....	389,377 04	36,388 62	246,967 81	942,706 45	608,327 82	12,007 39	1,749 66	113,740 51	14,976 64	8,422 90	2,374,664 84
1907.....	249,005 15	36,098 20	151,699 77	607,500 37	280,483 97	102,856 44	4,256 38	94,323 01	.....	6,032 48	1,532,255 77
1908.....	328,373 86	76,251 81	140,408 82	938,551 40	433,165 05	268,322 88	41,193 94	204,669 78	6,768 09	10,176 39	2,447,882 02
1909.....	461,068 88	119,319 46	358,498 55	1,047,569 14	870,470 10	314,478 78	19,728 15	97,657 21	7,824 66	9,305 39	3,305,920 32
1910.....	231,004 80	56,511 63	514,637 10	1,051,429 14	593,576 29	604,864 35	90,419 08	56,050 77	2,186 70	163,583 88	3,364,263 74
1911.....	345,724 31	55,906 68	348,979 90	929,120 03	801,903 70	89,549 98	44,425 19	148,941 89	404 11	210,103 42	2,975,059 21
1912.....	407,735 17	36,873 62	284,499 65	925,854 26	819,456 84	114,192 93	87,492 95	238,127 97	3,999 73	250,754 16	3,168 987 28
Total...	6,057,593 56	1,638,368 61	4,324,625 41	20,511,137 57	13,963,599 45	1,830,604 84	362,881 27	3,223,353 21	282,316 22	869.279 80	53,063,759 89

(*a*) Amount of other than Government funds, included in total :—$1,604,457.32.
(*b*) " " " " " " " " " 92,575.75.
(*c*) Includes ship channel debt, assumed by the Government, $2,725,504.10.
(*d*) $10,836.57 charged against Yukon telegraphs.

EXPENDITURE ON DREDGING BY

Year.	Nova Scotia.	P.E.I.	New Brunswick.	Quebec.	Ontario.	Manitoba.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
To Confederation				14,394 61	13,959 72	
1867 to 1882	79,869 38	36,704 18	119,769 06	293,472 67	105,612 77	17,364 96
1883	36,608 92	4,314 76	11,076 32	25,074 26	16,017 84	
1884	34,521 07	11,640 06	13,541 11	20,629 03	12,875 56	
1885	15,467 30	7,199 38	19,333 32	18,839 77	19,895 38	9,965 89
1886	18,678 42	9,427 55	11,894 03	13,098 17	20,634 95	9,762 12
1887	18,522 55	4,988 39	6,489 06	19,066 71	20,250 97	9,561 18
1888	19,024 83	4,388 20	6,532 07	21,335 18	12,659 88	12,410 84
1889	25,029 39	5,095 30	9,913 02	13,609 53	20,833 39	17,781 39
1890	16,958 99	9,757 21	14,957 95	14,427 18	17,454 83	14,743 89
1891	18,173 63	7,675 72	7,723 76	20,677 42	22,675 25	15,001 54
1892	17,241 55	11.838 96	15,546 53	8,065 86	25,803 62	14,992 51
1893	13,213 49	13,668 67	18,113 64	6,389 45	47,609 47	14,745 85
1894	14,633 71	9,622 84	17,593 55	15,244 41	29,986 03	12,890 92
1895	17,602 69	9,248 88	13,135 13	20,807 01	19,931 20	9,957 33
1896	12,720 64	8,860 08	15,542 28	23,956 65	21,271 38	7,676 85
1897	19,548 69	8,823 37	30,160 39	129,888 92	47,099 77	9,839 98
1898	28,341 69	8,661 21	17,463 24	241,177 17	96,188 65	7,997 14
1899	27,844 99	12,314 60	22,717 37	366,625 74	127,723 31	8,025 14
1900	27,218 12	16,046 61	25,513 57	474,086 27	122,880 65	8,032 22
1901	32,053 07	18,710 58	31,398 80	521,519 12	77,677 86	7,999 75
1902	39,368 10	16,185 45	28,628 94	782,882 26	237,922 26	8,018 81
1903	31,753 31	14,541 49	36,195 40	84,593 69	342,387 97	21,540 10
1904	34,193 87	13,784 67	56,341 69	129,225 60	421,508 55	21,855 39
1905	34,654 19	17,862 29	53,321 39	258,424 84	546.240 47	31,715 18
1906	54,950 65	17,431 67	153,293 81	368,240 06	738,289 15	32,085 87
1907	63,232 83	19,473 01	148,179 40	408,150 28	802,401 67	24,027 06
1908	234,989 06	33,039 17	657,545 02	605,799 38	1,105,225 59	25,092 56
1909	568,116 61	32,422 25	442,434 61	608,856 62	1,681,768 61	37,080 49
1910	326,253 80	23,991 51	515,036 63	254,627 93	1,707,032 78	24,014 31
1911	376,237 22	36,358 55	724,447 83	498,369 04	1,782,588 42	31,921 64
1912	380,357 80	54,102 97	995,312 11	771,438 48	1,668,245 20	41,449 35
Total	2,638,380 56	498,179 58	4,239,151 03	7,052,993 31	11,932,653 15	507,490 26

PROVINCES AND ON PLANT, &c.

N.W.T.	British Columbia.	Generally.	Total		Dredging Plant.		Total for Dredging and Plant.
			Staff, &c.	Dredging.	Construction, &c.	Repairs, &c.	
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
.....	.....	....	.....	28,354 33	135,472 43	....	163,826 76
714 48	32,501 53	.....	.. ....	686,009 03	309,929 28	49,289 21	1,045,227 52
.....	7,301 08	1,886 71	... .	102,279 89	7,578 11	21,983 66	131,841 66
.....	14,822 88	3,815 71	.....	111.845 42	115,552 44	24,714 71	252,112 57
.....	17,724 77	4,913 34	.. ..	113,339 15	21,424 70	26,939 59	161,703 44
.....	14,979 64	2,830 43	.....	101,305 31	12,675 17	17,916 14	131,896 62
.....	15,017 12	5,803 94	.....	99,639 92	10,185 47	33,578 03	143,403 42
....	14,994 21	32 15	2,150 74	93,528 10	14,139 59	32,421 46	140,089 15
.....	14,147 62	....	5,463 47	111,873 11	38,791 75	46,214 33	196,879 19
.....	14,412 58	6,495 19	..... .	109,207 82	13,693 41	29,696 79	152,598 02
.....	14,685 66	2,915 22	....	109,528 20	15,305 36	28,659 42	153,492 98
.....	13,727 56	8,891 01	.....	116,107 60	18,896 69	30,846 04	165,850 33
....	14,717 55	5,973 78	.....	134,431 90	29,189 93	26,965 86	190,587 69
....	15,179 17	5,690 18	.....	120,840 81	78,665 81	34,757 71	234,264 33
.. ..	14,975 08	5,912 38	.....	111,569 70	71,179 33	31,173 78	213,922 81
.....	10,776 91	4,668 20	.....	105,472 99	36,042 77	22,995 87	164,511 63
....	20,002 96	3,242 29	.....	268,606 37	34,962 83	26,730 26	330,299 46
.....	27,997 83	3,673 05	.....	431,499 98	19,826 83	28,108 75	479,435 56
.....	19,955 48	3,162 04	... .	588,368 67	70,573 34	23,650 30	682,592 31
....	26,970 81	3,194 15	.....	703,942 40	29,741 05	29,803 77	763,487 22
.....	20,321 79	3,638 55	....	714,319 52	146,700 84	32,115 96	893,136 32
.....	44,093 53	4,199 12	.....	1,161,298 47	331,057 95	28,459 52	1,520,815 94
.....	51,276 81	4,901 51	....	587,190 28	361,613 56	33,587 31	982,391 15
.....	77,171 52	4,788 77	... .	758,870 06	331,661 84	42,520 10	1,133,052 00
.....	64,921 39	5,501 59	....	1,012,641 34	370,364 23	75,859 68	1,458,865 25
.....	79,865 90	5,055 83	....	1,449,212 94	398,167 61	74,934 53	1,922,315 08
.. ..	57,025 39	3,450 70	.....	1,525,940 34	372,267 17	66,321 77	1,964,529 28
....	88,144 23	4,626 97	.....	2,754:461 98	471,726 84	118,117 74	3,344,306 56
619 54	221,898 80	2,788 08	.....	3,595,985 61	779,805 47	171,982 35	4,547,773 43
2,131 34	186,924 59	2 113 72	... .	3,042,126 61	420,145 93	206,667 64	3,668,940 18
34,432 84	245,171 58	4,856 60	.....	3,734,383 72	549,461 49	187,358 40	4,471,203 61
9,421 84	338,084 01	2,631 94	.....	4,261,043 70	501,603 73	266,500 00	5,029,147 43
47,320 04	1,799,789 98	121,653 15	7,614 21	28,845,225 27	6,118,402 95	1,870,870 68	36,834,498 90

EXPENDITURE ON QUEBEC RIVERS.

Year.	Saguenay.	St. Maurice.	Gatineau.	Coulonge.	Black.	Du Moine.	Des Prairies.	Du Lièvre.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Before Confederation..	44,872 79	269,643 03	31,967 83	29,032 78	10,000 00	8,802 00	.....	.....
1867-1882.	2,418 50	168,915 25	29,526 44	318 00	2,500 00	19,478 54	13,503 83	.....
1883.....	5,477 80	21,683 88	324 92	1,014 45	3,113 36	615 68	.....	.....
1884.....	9,753 15	32,437 62	1,655 13	2,305 52	1,479 12	2,619 89	.....	.....
1885.....	9,433 20	34,738 60	808 31	10,268 91	140 97	.....	.....	.....
1886.....	9,002 02	42,358 42	1,551 98	14,279 18	1,139 16	235 96	.....	.....
1887.....	4,611 66	37,975 54	5,920 88	10,424 19	1,423 20	.....	.....	.....
1888.....	4,628 53	35,186 44	3,018 24	1,037 98	1,045 59	.....	.....	.....
1889.....	4,042 20	39,244 69	843 18	1,871 78	3,116 78	1,122 98	.....	.....
1890.....	3,139 95	18,815 35	2,061 69	65 00	1,072 77	58 56	.....	.....
1891.....	4,102 00	23,794 45	2,452 09	308 00	240 71	1,628 00	.....	.....
1892.....	4,674 45	21,384 02	2,049 83	1,341 76	1,625 61	.....	.....	.....
1893.....	4,529 09	10,363 58	1,020 44	10 00	184 73	454 32	.....	929 39
1894.....	2,948 20	9,593 69	1,285 78	1,503 34	17 50	.....	10 45	.....
1895.....	4,933 23	10,389 82	513 27	1,106 51	10 50	.....	.....	.....
1896.....	575 08	14,746 42	420 42	2,167 37	75 52	14 00	13,514 28	.....
1897.....	277 24	19,010 33	344 54	3,002 35	2,060 59	1,946 33	.....	.....
1898.....	.....	17,479 09	825 85	2,785 29	2,507 02	2,443 27	.....	.....
1899.....	.....	23,616 32	507 86	1,398 83	915 18	548 93	.....	.....
1900.....	.....	56,681 35	755 48	4,082 50	556 18	231 10	Richelieu.	.....
1901.....	.....	114,799 55	840 74	707 40	2,537 56	319 42	.....	.....
1902.....	.....	205,286 06	1,691 93	1,979 54	470 30	200 23	.....	.....
1903.....	.....	78,602 91	7,240 40	1,892 59	142 95	1,005 79	174 10	.....
1904.....	.....	76,665 24	1,946 02	1,076 17	294 26	978 94	585 05	.....
1905.....	24,938 16	100,757 43	12,423 65	2,575 46	1,957 89	5,475 01	85 45	875 00
1906.....	21,820 24	82,708 16	3,497 42	1,362 02	147 33	1,585 71	413 98	.....
1907.....	6,910 66	59,336 61	4,506 14	9 80	16 56	.....	122 45	66 75
1908.....	6,136 27	96,072 21	1,953 67	2,848 35	2,007 32	37 75	111 50	7 00
1909.....	7,231 42	86,742 86	2,134 22	1,021 12	3,192 35	187 86	133 00	37 00
1910.....	11,268 84	89,947 65	948 10	1,552 49	1,413 11	673 01	120 00	30 41
1911.....	14,248 13	102,056 07	6,246 49	1,818 55	257 12	8 00	107 00	.....
1912.....	8,714 86	107,682 66	4,768 21	2,862 89	483 45	.....	193 81	.....
Total...	.....	.....	.....	.....	.....	.....	13,514 28	.....
	220,687 67	2,108,115 30	136,051 15	108,030 12	46,144 69	50,671 28	2,046 34	1,945 55

SLIDES AND BOOMS.

ONTARIO RIVERS.

Quebec and Ontario Ottawa.	Madawaska.	Petewawa.	South Nation.	Newcastle.	Generally and Collection	Saskatchewan River.	Total.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
495,083 14	76,727 37	67,634 01	.....	313,489 72	.....	.....	1,346,652 67
48,300 86	5,667 81	7,713 00	488 45	6,279 58	.....	.....	305,110 26
35,882 73	6,599 07	1,543 49	700 00	5,204 97	548 40	.....	82,708 75
33,769 42	15,603 65	4,599 90	575 02	7,175 90	224 93	.....	112,199 25
32,722 72	10,895 54	2,920 56	.....	6,712 76	994 15	.....	109,635 72
46,790 56	3,153 20	1,185 66	.....	9,581 32	193 25	.....	129,470 71
47,677 85	6,050 93	1,552 26	.....	10,036 34	.....	.....	125,672 85
29,848 40	6,418 28	3,409 34	.....	6,089 03	4,130 75	.....	94,812 58
40,229 66	5,858 95	3,837 04	.....	7,233 89	977 92	.....	108,379 07
41,615 59	1,698 13	286 40	.....	3,049 74	7,770 24	.....	79,633 42
49,385 78	3,273 28	9,084 66	.....	3,307 93	5,851 91	.....	103,428 81
39,338 61	4,928 62	3,612 80	.....	5,907 74	3,741 75	.....	88,605 19
37,646 13	3,239 17	8,267 35	.....	5,623 05	2,685 07	.....	74,952 32
31,362 58	6,259 85	8,682 19	.....	7,243 28	3,648 64	.....	72,555 50
30,470 18	6,994 03	6,007 04	.....	8.345 70	3,624 52	.....	72,394 80
30,476 69	1,464 87	2,402 65	.....	2,971 90	2,146 16	.....	57,461 08
32,345 45	35 00	1,998 20	.....	2,822 03	2,099 05	.....	65,941 11
29,024 43	1,237 87	1,480 39	.....	3,169 14	2,474 81	.....	63,427 16
25,979 83	2,728 86	1,571 79	.....	4,069 54	3,085 93	.....	64,423 07
29,209 64	1,362 66	2,017 86	.....	4,201 32	1,897 58	.....	100,995 67
33,099 20	316 06	1,108 66	.....	4,895 66	2,080 37	.....	160,704 62
38,809 19	4,047 08	2,136 82	.....	2,473 38	3,656 08	.....	260,750 61
35,006 92	1,384 47	1,808 77	.....	4,550 02	3,815 70	.....	135,624 62
31,247 58	544 43	6,082 08	.....	3,922 82	4,206 78	.....	127.549 37
34,028 02	1,275 63	3,106 91	.....	3,610 96	4,249 38	.....	195,358 95
29,302 93	146 42	1,702 24	.....	4,823 95	4,484 95	.....	151,995 35
20,447 10	81 97	4,298 29	.....	831 25 (a)	2,508 50	.....	98,636 08
29,345 73	.....	2,756 36	.....	399 16	3,041 22	.....	144,716 54
30,239 30	1,740 84	868 39	.....	697 99	2,860 22	.....	137,086 57
24,533 02	412 35	5,399 72	.....	516 77	2,782 12	19,967 05	159,564 64
30,194 21	2,350 13	3,097 09	.....	247 00	2,983 42	26,574 56	190,187 77
32,704 78	5,008 34	4,463 80	.....	250 00	2,908 01	4,792 97	174,833 78
.....	.....	.....	.....	.....	.....	.....	.....
1,556,118 23	187,504 86	176,635 72	1,763 47	449,233 84	85,671 81	51,334 58	5,195,468 89

(a) All works transferred to Railways and Canals except Fenelon Falls and Burleigh Rapids.

EXPENDITURE ON ROADS AND BRIDGES.

Year.	Quebec.	Quebec & Ontario.	Ontario.	Manitoba.	New Brunswick.	N. W. T.	Yukon.	Generally.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Before Confederation	440,830 13		40,724 39						481,554 52
1867 to 1882	84.238 35	*(a)*	691,525 33	366,304 53				2,368 34	1,144,436 55
1883	2,454 54	1,612 29							4,066 83
1884	4,321 35	27,774 47	120 44			1,769 53			33,985 79
1885	1,448 57	18,659 76	35 46						20,143 79
1886	1,063 39	13,436 40	13,438 70	10,204 40		150 00			38,292 89
1887	5,749 76	9,384 85	18,010 54			3,805 93			36,951 08
1888	821 15	4,428 06	16,593 99			22,965 75			44,808 95
1889		6,680 49	32,129 50			1,782 64			40,592 63
1890		790 55	43,224 05			49,833 28			93,847 88
1891			28,070 76			28,415 39			56,486 15
1892			16,476 72			33,088 89			49,565 61
1893	500 62	316 50	14,072 39	2,500 00		6,096 77			23,486 28
1894	3,423 00	3,990 51	5,978 67			3,828 98		200 60	17,421 16
1895	4,143 87	2,274 23	7,809 12			5,002 51			19,229 73
1896	1,597 30	778 90	24,207 90			2,849 57			29,433 67
1897	9,499 13	104 51	32,506 73			3,211 07			45,321 44
1898	210 01		21,857 17			46,580 60			68,647 78
1899	355 03	459 46	11,531 84			30,149 54			42,495 87
1900	172 55	2,462 61	25,357 98			29,945 86	102,749 01		160,688 01
1901	5,000 00	34,137 82	134,142 74			39,022 69	46,007 22	172 90	258,483 37
1902		90,669 31	38,397 58			19,358 17	251,700 84		400,125 90
1903	1,130 52	4,741 74	10,965 85			28,926 17	481 00		46,245 28
1904	698 51	15,834 75	9,482 91			77,743 12			103,759 29
1905		18,909 35	12,295 93			59,820 64		3,322 21	94,348 13
1906		26,976 47	12,814 28			62,246 52		1,322 26	103,359 53
1907		6,772 94	10,079 86			27,608 75			44,461 55
1908		7,776 80	8,387 45			2,994 59			19,158 84
1909	*(b)* 10,126 86								
	105 56	9,903 03	7,433 69			21,537 12			49,106 26
1910	*(b)* 14,537 98	5,611 84	8,753 78			1,831 01			30,734 61
1911	*(b)* 1,749 94								
	24,937 17	22,572 68	8,527 78		31,682 92	591 00			90,061 49
1912	*(b)* 1,158 20	5,216 32	170,354 16		20,003 18	895 78			197,627 64
Total	620,273 49	342,276 64	1,475,307 69	379,008 93	51,686 10	612,051 87	400,938 07	7,385 71	3,888,928 50

(a) Up to 1882 the expenditure on interprovincial bridges was divided between Quebec and Ontario.
(b) Metapedia bridge.

EXPENDITURE ON TELEGRAPH LINES BY PROVINCES.

Year.	Newfoundland.	P.E.I.	Nova Scotia.	New Brunswick.	Quebec, (Gulf cables and "Tyrian.")	Ontario.	Manitoba and N.W.T.	British Columbia.	Yukon.	Generally.	Total.
Before Confederation.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1867 to 1882.....	.....	16,546 61	70,109 67	16,103 78	185,286 32	.....	72 00	450,999 91	.....	7,254 27	746,372 56
1883.....	.....	.....	1,528 65	12,425 42	24,272 11	.....	49,449 05	30,505 89	.....	18,490 43	136,671 55
1884.....	.....	.....	.....	1,329 11	22,432 40	.....	35,072 05	45,415 35	.....	23,115 30	127,364 21
1885.....	.....	.....	.....	4,152 62	26,623 11	.....	34,180 27	38,382 51	.....	28,934 59	132,273 10
1886.....	.....	1,946 66	.....	.....	6,971 28	1,868 86	45,829 26	36,416 33	.....	26,379 41	119,411 80
1887.....	.....	1,946 66	5,274 39	.....	7,435 75	74 07	53,871 86	11,078 44	.....	25,817 12	105,498 29
1888.....	250 00	1,946 66	5,968 29	1,614 40	16,638 75	5,629 24	57,164 91	933 29	.....	15,882 51	106,028 05
1889.....	250 00	1,946 66	10,011 09	1,316 06	32,066 99	9,072 08	38,261 81	10,801 39	.....	18,601 03	122,327 11
1890.....	250 00	1,946 66	5,600 34	1,456 88	23,887 19	89 56	23,812 21	24,841 27	.....	17,044 08	98,928 19
1891.....	.....	1,946 66	5,441 35	5,293 03	28,907 88	287 49	22,476 54	21,405 59	.....	21,138 18	106,896 72
1892.....	250 00	1,946 66	5,839 64	3,276 27	20,759 19	705 09	19,959 61	9,277 23	.....	10,352 31	72,366 00
1893.....	500 00	1,946 66	2,935 14	4,492 69	13,963 16	1,634 51	16,328 37	16,057 75	.....	2,898 39	60,756 67
1894.....	250 00	1,946 66	4,291 02	1,617 89	15,410 25	750 37	14,114 72	9,991 97	.....	4,554 21	52,927 09
1895.....	588 16	1,946 66	3,591 91	6,171 64	17,625 69	1,603 79	15,855 72	14,324 30	.....	1,438 33	63,146 20
1896.....	250 00	1,946 66	3,995 85	4,559 83	17,448 79	1,621 82	14,062 22	16,706 22	.....	5,845 97	66,437 36
1897.....	250 00	2,919 99	3,527 06	1,867 09	24,770 51	1,854 92	15,092 87	10,056 29	.....	4,381 28	64,720 01
1898.....	.....	1,946 66	5,239 31	3,799 30	33,165 88	1,961 98	14,353 22	12,602 57	.....	6,128 70	78,297 62
1899.....	250 00	1,946 66	5,279 37	6,858 29	37,563 23	1,653 87	14,507 34	17,204 58	24,836 57	5,186 91	115,286 82
1900.....	250 00	1,946 66	10,632 15	2,389 25	67,260 55	1,501 21	15,277 55	a243,979 36	172,848 77	6,423 97	522,509 47
1901.....	250 00	973 33	5,747 92	2,139 24	79,217 44	5,025 52	16,461 34	a300,298 33	108,356 38	14,157 08	532,626 58
1902.....	250 00	1,946 66	4,179 94	1,812 89	56,674 19	3,289 04	18,538 51	26,694 67	429,934 54	85,890 73	629,211 17
1903.....	500 00	1,946 66	22,369 64	3,383 87	170,482 04	3,494 54	21,753 22	25,006 77	307,792 64	2,363 20	559,092 58
1904.....	250 00	1,946 66	23,458 77	2,516 35	95,660 78	2,301 52	35,280 64	20,708 24	200,265 51	3,305 04	385,693 51
1905.....	.....	5,583 65	11,692 37	7,795 39	116,461 08	3,325 34	44,727 04	39,865 21	229,351 05	3,263 23	462,064 36
1906.....	.....	6,999 66	21,756 33	2,037 64	152,538 38	2,829 09	33,835 74	35,752 84	208,508 56	2,026 92	466,285 16
1907.....	250 00	920 33	13,876 34	1,785 29	130,243 72	760 96	29,147 20	28,298 86	169,763 34	1,559 44	376,605 48
1908.....	250 00	7,000 00	22,124 02	2,698 37	120,328 11	2,364 44	39,893 60	55,509 59	209,521 39	2,543 91	462,233 43
1909.....	250 00	10,033 32	21,350 62	2,982 73	127,671 88	118 75	50,692 00	79,715 61	237,788 80	4,876 41	535,480 12
1910.....	250 00	6,946 66	24,684 53	3,064 21	112,508 71	488 30	50,324 18	48,610 41	199,988 24	1,784 46	448,649 70
1911.....	250 00	6,946 66	26,999 19	2,644 22	128,448 74	3,395 16	72,224 89	106,257 41	218,171 41	3,155 80	568,493 48
1912.....	250 00	6,946 66	32,529 44	3,940 31	133,054 45	364 22	110,304 16	103,377 49	246,036 68	4,955 37	641,758 78
Total.....	6,088 16	104,910 09	380,034 34	115,524 06	2,045,778 55	57,165 74	1,022,924 10	1,891,075 67	2,963,163 88	379,748 58	8,966,413 17

a Part afterwards included in Yukon system.

TOTAL EXPENDITURE ON PUBLIC WORKS.

Year.	Public Buildings	Harbour Works.	Dredging &c.	Dredge Vessels &c.	Slides & Booms.	Roads & Bridges	Telegraphs.	Miscellaneous.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Before Confederation.	4,183,469 89	2,445,899 21	28,354 33	135,472 43	1,346,652 67	481,554 52		2,150,231 24	$10,771,625 29
1867 to 1882	10,369,383 91	5,429,136 27	686,009 03	359,218 49	305,110 26	1,144,436 55	746,372 56	1,372,463 31	20,412,130 38
1883	1,013,039 39	621,731 64	102,279 89	29,561 77	82,708 75	4,066 83	136,671 55	39,299 33	2,029,359 15
1884	1,682,068 93	928,852 84	111,845 42	140,267 15	112,199 25	33,985 79	127,364 21	43,367 19	3,179,950 78
1885	1,369,460 72	844,165 55	113,339 15	48,364 29	109,635 72	20,143 79	132,273 10	45,242 03	2,682,624 35
1886	1,544,904 35	864,563 82	101,305 31	30,591 31	129,470 71	38,292 89	119,411 80	39,945 91	2,868,486 10
1887	1,472,267 03	742,393 02	99,639 92	43,763 50	125,672 85	36,951 08	105,498 29	73,575 48	2,699,761 17
1888	1,433,773 41	785,699 19	93,528 10	46,561 05	94,812 58	44,808 95	166,028 05	44,020 84	2,649,232 17
1889	1,557,546 76	823,228 83	111,873 11	85,006 08	108,379 07	40,592 63	122,327 11	40,009 79	2,888,963 38
1890	1,303,632 25	3,709,504 58	109,207 82	43,390 20	79,633 42	93,847 88	98,928 19	31,353 41	5,469,497 75
1891	1,131,030 59	1,138,632 45	109,528 20	43,964 78	103,428 81	56,486 15	106,896 72	21,453 28	2,711,420 98
1892	838,434 39	844,869 23	116,107 60	49,742 73	88,605 19	49,565 61	72,366 00	24,953 63	2,084,644 38
1893	1,142,442 73	632,732 11	134,431 90	56,155 79	74,952 32	23,486 28	60,756 67	149,490 67	2,274,448 47
1894	1,178,321 90	623,997 18	120,840 81	113,423 52	72,555 50	17,421 16	52,927 09	135,534 51	2,315,021 67
1895	926,446 84	572,107 87	111,569 70	102,353 11	72,394 80	19,229 73	63,146 20	165,971 28	2,033,219 53
1896	735,757 83	404,603 32	105,472 99	59,038 64	57,461 08	29,433 67	66,437 36	125,204 46	1,583,409 35
1897	865,889 33	253,876 86	268,606 37	61,693 09	65,941 11	45,321 44	64,720 01	118,606 00	1,744,654 21
1898	969,176 58	475,848 35	431,499 98	47,935 58	63,427 16	68,647 78	78,297 62	108,983 82	2,243,816 87
1899	849,798 38	557,487 77	588,368 67	94,223 64	64,423 07	42,495 87	115,286 82	125,195 29	2,437,279 51
1900	1,162,805 42	734,098 23	703,942 40	59,544 82	100,995 67	160,688 01	522,509 47	118,442 32	3,563,026 34
1901	1,303,411 70	1,357,822 51	714,319 52	178,816 80	160,704 62	258,483 37	532,626 58	193,495 44	4,699,680 54
1902	2,040,388 71	1,603,518 28	1,161,298 47	359,517 47	260,750 61	400,125 90	629,211 17	331,988 59	6,786,799 20
1903	1,539,005 60	2,375,536 70	587,190 28	395,200 87	135,624 62	46,245 28	559,092 58	192,622 18	5,830,518 11
1904	1,850,281 97	2,631,049 66	758,870 06	374,181 94	127,549 37	103,759 29	385,693 51	220,887 72	6,492,273 52
1905	3,067,415 65	2,493,371 24	1,012,641 34	446,223 91	195,358 95	94,348 13	462,064 36	532,586 19	8,304,009 77
1906	3,743,483 59	2,374,664 84	1,449,212 94	473,102 14	151,995 35	103,359 53	466,285 16	585,423 67	9,347,527 22
1907	2,784,713 69	1,532,255 77	1,525,940 34	438,588 94	98,636 08	44,461 55	376,605 48	354,194 21	7,155,396 06
1908	4,331,901 40	2,447,882 02	2,754,461 98	589,844 58	144,716 54	19,158 84	462,233 43	449,186 15	11,199,384 94
1909	5,845,286 70	3,305,920 32	3,595,985 61	951,787 82	137,086 57	49,106 26	535,480 12	364,085 99	14,784,739 39
1910	3,498,587 60	3,364,263 74	3,042,126 61	626,813 57	159,564 64	30,734 61	448,649 70	171,624 82	11,342,365 29
1911	3,090,665 78	2,975,059 21	3,734,383 72	736,819 89	190,187 77	90,061 49	568,493 48	421,364 08	11,807,035 42
1912	4,141,326 94	3,168,987 28	4,261,043 70	768,103 73	174,833 78	197,627 64	641,758 78	574,985 02	13,928,666 87
Total...	73,006,110 96	53,063,759 89	28,845,225 27	7,989,273 63	5,195,468 89	3,888,928 50	8,966,413 17	9,365,787 85	190,320,968 16

STATEMENT OF REVENUE COLLECTED 1867 TO 1912 INCLUSIVELY.

Year.	Slides and Booms.				Yamaska River Lock.	River du Lièvre Lock.	Telegraphs.	Graving Docks.	Casual Revenue.	Total.
	Ottawa River Works.	St. Maurice River.	Trent and Newcastle District.	Saguenay River.						
Previous to	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1883	1,131,359 05	145,295 95	3,111 98	14,033 97			102,199 07		177,737 66	1,573,737 68
1883	105,169 89	16,122 21					27,997 26		6,174 71	155,464 07
1884	92,529 22	8,009 37					33,352 07		23,095 27	156,985 93
1885	60,379 08	5,128 14					39,526 19		6,536 54	111,569 95
1886	60,908 75	669 13					46,863 42		5,911 06	114,352 36
1887	62,915 95	813 86					29,066 28		2,578 01	95,374 10
1888	47,586 58	1,402 76					15,797 86	5,337 46	41,036 33	111,160 99
1889	83,495 18	4,240 61					28,609 88	14,811 86	13,030 33	144,187 86
1890	98,992 26	6,895 35					11,829 15	33,412 21	21,667 29	172,796 26
1891	75,430 69	663 11					13,230 42	47,530 66	2,887 01	139,741 89
1892	49,186 25	7,759 84		(a) 8,847 55			10,229 11	24,906 96	6,591 97	107,521 68
1893	61,110 88	11,854 15	753 72			102 17	9,359 03	42,707 30	3,322 78	129,210 03
1894	63,151 38	14,371 82	2,069 87		222 49		8,617 92	31,550 65	6,517 52	126,501 65
1895	52,311 52	15,755 97		(b) 9,148 74	357 78	1,078 59	8,331 56	23,011 67	5,101 87	115,097 70
1896	50,123 33	(c) 21,358 74			284 40	230 33	7,430 47	22,583 95	17,473 92	119,485 14
1897	51,818 17	22,090 50			264 91	198 45	9,371 93	26,022 06	19,024 81	128,790 83
1898	60,714 87	29,893 41			355 46	246 84	10,750 65	33,366 20	3,970 59	139,298 02
1899	38,818 98	21,386 59	860 79		377 14	173 72	10,472 99	31,608 60	3,070 87	106,769 68
1900	40,256 88	16,712 45			324 59	296 80	45,794 95	21,490 75	8,686 50	133,562 92
1901	41,503 18	21,322 22	12,068 62		465 37	252 95	122,360 86	34,735 16	5,840 93	238,549 29
1902	37,923 23	13,565 48	2,486 47		266 21	279 44	114,266 21	37,348 98	20,702 11	226,838 13
1903	46,023 95	29,232 33	2,266 70		(d) 358 28	279 78	132,422 17	45,877 08	19,603 24	276,063 53
1904	41,119 48	27,321 67	2,054 47				147,391 94	32,444 56	22,730 47	273,062 59
1905	44,652 03	36,431 21	1,790 73			Rents.	139,758 44	24,754 30	32,966 96	280,353 67
1906	37,947 69	37,101 02	6,162 50				106,300 38	44,067 63	29,735 45	261,314 67
1907	43,843 61	41,314 16	1,670 21				91,760 84	30,652 79	70,232 54	279,474 15
1908	39,612 03	45,433 21	1,715 43			17,089 08	121,553 57	63,208 58	10,718 28	299,330 18
1909	40,410 16	34,365 86	1,480 96			23,402 49	113,175 34	60,505 16	26,033 53	299,373 50
1910	30,232 75	36,780 58	1,565 53	3,088 34		45,138 61	136,747 31	45,816 92	186,514 92	485,884 96
1911	52,347 31	52,314 00	1,955 11	(e) 8,253 74		37,652 37	169,585 15	42,876 09	173,345 88	538,329 65
1912	31,973 38	50,577 65	1,402 89	3,835 81		33,354 76	200,330 20	50,614,84	46,541 26	418,630 79
Total	2,773,847 71	776,183 35	43,415 98	47,208 15	3,276 63	3,139 07 156,637 31	2,064,482 62	871,242 42	1,019,380 61	7,758,813 85

(a) Account on dues accrued from 1877 to 1891. (b) Balance of dues accrued from 1877 to 1891.
(c) Less $204.77 refund paid on account of Trent and Newcastle. (d) Tolls on locks were abolished by Order in Council 28th July, 1903.
(e) $3,334.30 for 1908 1909.

CANADA
REPORT OF THE MINISTER OF PUBLIC WORKS

REPORTS

OF THE

OTTAWA RIVER STORAGE

AND

Notes on a Visit to the Panama Canal

ALSO

GEODETIC LEVELLING

BETWEEN

STEPHENS, MINN., and WINNIPEG BEACH, MAN.,

AND BETWEEN

Trenton, Lake Ontario, Orillia, and Lake Couchiching, Ont.

Submitted in accordance with the Provisions of Chapter 36, Section 37 of the Revised Statutes of Canada.

VOL. II

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
[No. 19—1913.] 1913

CONTENTS

VOLUME I.

Contains the report of the Minister of Public Works on the works under his control fo the fiscal year ended March 31, 1912.

VOLUME II.

Contains reports on the Ottawa River Storage Scheme,
and
Notes on a visit to the Panama Canal.
also
Geodetic Levelling, between Stephens, Minn., and Winnipeg Beach, Man.
and between
Trenton, Lake Ontario, and Orillia, Lake Couchiching, Ont.

To His Royal Highness the Duke of Connaught, Governor General of Canada, &c.

I have the honour to lay before Your Royal Highness the Report of the Department of Public Works of Canada, Volume II, for fiscal period ended March 31, 1912.

I have the honour to be,
Sir,
Your Royal Highness's most obedient servant,

ROBERT ROGERS,
Minister of Public Works.

OTTAWA, November 21, 1912.

November 15th, 1912.

Hon Robert Rogers,
Minister of Public Works

Sir,—I have the honour to present herewith, the third annual progress report, transmitted to the Chief Engineer by the Engineer-in-charge, Mr. C. R. Coutlée, which covers the works executed, during the fiscal year, in the construction of storage reservoirs on the Upper Ottawa River.

This report gives full detail of all construction work performed during the fiscal year on the reserve dams undertaken, as well as the result of further hydraulic studies of the river and its tributaries.

Origin of storage scheme.

The storage of the surplus water of the Ottawa River has been demanded by various interests for a great number of years. In 1902 and 1903, the matter was particularly brought to the attention of the Government, memorials being presented asking that this work be undertaken as a national enterprise.

During periods of low water in the river, navigation is rendered difficult, and the power developments supplying energy for industries and public utilities suffer severely.

To remedy these conditions, it was represented that the best scheme would be to establish some system of storage reservoirs at the head waters of the Ottawa River, by which some of the surplus waters of the spring could be collected and conserved, to be released gradually during the low period and thus augment the low flow.

In 1904, Mr. George P. Brophy, Superintending Engineer, Ottawa River Works, was commissioned by the Department of Public Works to carry on a preliminary investigation of storage possibilities, the work having been recognized as of Federal importance. The result of his investigation is published in the report of the Georgian Bay Ship Canal, page 303.

During the extensive surveys made for the proposed Georgian Bay Ship Canal, and in elaborating a project for a first-class waterway, it was soon noticed that no satisfactory scheme could be devised unless it included an efficient partial control, by storage, of the spring floods of the Ottawa River throughout the watershed, in order to reduce the fluctuations in the different reaches, to eliminate swift and dangerous currents and to establish practically slack water navigation.

In the report on that waterway, it was shown that conditions in the upper Ottawa River were favourable to a limited control of the surplus waters which could be used to increase the low water flow in time of deficiency, and that this control would not only be of benefit to navigation, but would be of great advantage to all commercial and industrial interests on the river depending on water for power and transportation.

Moreover, the fact that large communities depend on an adequate and permanent river flow for the necessities of life, such as water supply for domestic purposes and for fire protection, and the economical production of electrical energy for lighting, tramways, industries, etc., gives to this control a national and vital importance. To these public utilities, a shortage of water becomes a serious matter, as was exemplified in 1905 by the helpless condition of the powers

at the Chaudière Falls on the Ottawa River, on account of the long period of extremely low flow.

This should be a matter of great concern to the Government as well as to all other interested parties, and the conservation of surplus water, to improve conditions during periods of deficiency, becomes a question of the greatest public interest.

In the report presented on the canalization of the Ottawa River, in the summary giving the results and conclusions of the survey, page XXI, the Engineering Board in charge advised as follows:—

"1. That it is of great importance to continue every year the flow measurements of the Ottawa, Mattawa and French Rivers, at low, ordinary and high water stages, in order to have continuous records of the same, which will prove invaluable in the further development of the Canal problem, in case of construction, and a better knowledge of the water power possibilities.

"2. That though it has been ascertained that the Ottawa river flood waters can be restrained partially, the preliminary investigations made, disclose the fact that data are lacking upon which to base a definite and judicious storage scheme. Twenty thousand square miles of the upper drainage area are but little known, and a reconnaissance of each lake is necessary before the true storage value of the area can be stated.

"Each of the larger tributaries—the Rouge, the Lièvre, the Gatineau, the Coulonge, the Black, the Du Moine, the Montreal, the Petawawa and the Madawaska—requires to have its storage lakes definitely decided upon, and the inflow, outflow and surface height recorded continuously for a period of several years.

"Continuous records of this kind are the only data upon which the restraint of floods and the reserve of water for navigation and power purposes can be determined with accuracy. Their value depends entirely upon the length of time over which records extend; it is therefore recommended that the collection of this information be continued without interruption.

"3. That this study be extended gradually to all the large river drainage valleys which it is possible to develop for navigation and power purposes."

Three large reservoirs are now under construction, the Timiskaming, the Kipawa and the Quinze and Expanse Lake reservoirs, which, it is estimated will give approximately 6,000 square mile feet of storage when worked at their full capacity or about 160 billion cubic feet of water which, instead of running to waste, will be pent up in these reservoirs and gradually let out during the low period.

The three dams and controlling works required in connection with the Timiskaming and Kipawa reservoirs are practically completed, and the extensive dam required for the Lac des Quinze has been commenced.

Works for another large reserve at Kakabonga Lake, which may be made to drain either through the Gatineau River or the Upper Ottawa, are now under study.

Detailed information has been given in previous reports relating to the investigations made, possibilities of storage, work performed and results anticipated.

Apart from these reservoirs being a necessary adjunct to the proposed Ottawa River deep waterway for safe navigation, should the waterway ever be built, their beneficial effect may be summarised as follows:—

1st.—They will improve the potability of the water.
2nd.—They will increase the depths in present navigable reaches of the river.
3rd.—They will increase and steady the flow for power production.

I would call attention to Mr. Coutlée's remarks, in his letter at the beginning of the report, regarding the valuable water powers of the Ottawa River, if con-

trolled and developed properly. The present dual Provincial control of the water, in so far as power is concerned, is no doubt unsatisfactory in view of the conservation of the river for deep water navigation.

It seems that the acquisition and absolute control, by the Federal Government, of the various powers on the Ottawa is an absolute necessity if the proposed waterway is to be built now or in the near future.

The plans, as prepared for the canalization of the river from Mattawa down to Montreal, almost completely change the actual condition of the river. Many powers are obliterated and others are created, while the value of some is greatly enhanced.

If these powers, which under the requirements of the navigation scheme are to be obliterated, are allowed to be developed by different parties, the damages to pay in case of canal construction will be very large.

For the other powers, conditions will be changed so much that, unless designed at first along the lines of the canal project—and then the first cost would be excessive for initial development—heavy damage will also be claimed if the canal is constructed.

The navigation project concentrates the various falls at twelve different points, where dams are proposed in connection with locks.

Even if the construction of the canal is not decided at present, it would seem to be a good policy to commence constructing some of the dams to facilitate power development.

This matter is of so great importance that it should form the subject of careful study and recommendations by a technical Board, who would be commissioned to try and evolve some workable agreement with the provinces.

The total amount of appropriation for 1911-12, for construction work and hydraulic investigation, in connection with the Ottawa River Storage, was, $353,000.00.

Total expenditure up to April 1st, 1912, since storage was commenced, is $609,347.17.

In Mr. Coutlée's report will be found all the details of the work accomplished on the various storage dams during the fiscal year, 1911–12, followed by a report on the result of further hydraulic investigations of the Ottawa River and tributaries. Several valuable reports from the assistants are also included.

I have the honour to be ,sir,
Your obedient servant,

A. ST. LAURENT,
Assistant Deputy Minister.

September 19, 1912.

EUGENE D. LAFLEUR, ESQ., C.E.
Chief Engineer.
Public Works Dept., Ottawa.

SIR,—I have the honour to present the Annual Report of the Ottawa River Storage work for the fiscal year, April, 1911, to March, 1912.

From Labrador to Fort William, Ontario, is by a geological accident a granite plateau generally 1,000 ft. above the sea. In cooling many cracks have been formed and the winter snows fill these with water creating innumerable lakes from one square mile to hundreds of square miles in area. From each lake a river pours out, draining the watershed and tumbling over granite precipices in its descent.

Largest and most important of these tributaries to the St. Lawrence is the Ottawa river, draining as it does 55,000 square miles of basin, or the area of England and Wales. The precipitation over this great basin is 30 to 33 inches per year, a third of which falls as snow, which does not run to waste but accumulates till spring.

The river is now fairly well understood, it is over 600 miles in length and flows along three sides of a rough rectangle. The upper 300 miles flows westwards and is generally parallel to the height of land dividing it from Hudson Bay. This drains 10,000 square miles of territory situated on top of the granite plateau, about elevation 900 and consisting of forested swamps, clay lands and rock outcrops.

At Quinze, the west end of this leg, is a sharp turn to the south for 100 miles through Lake Timiskaming to Mattawa and a fall of 300 feet in the first 12 miles. This may be called the "Niagara" of the Ottawa, the fall being equal to that between Lake Erie and Lake Ontario and available for power in three steps of 100 feet each. The 40 miles just above Mattawa has a fall of 80 feet that could be concentrated in two steps.

Below Mattawa the river turns sharply south east and continues roughly on this course for 300 miles to Montreal, descending 500 feet. The various falls in this stretch could be concentrated into twelve steps, affording energy to the extent of two million horse power.

Such a river is, of course, extraordinary, but straggling down in broken profile it has no value for navigation nor for power. It is not an available asset to Canada. The full benefits of the great storage system now nearing completion moreover, will not be felt until subsidiary reservoirs are created all the way down stream. The Mississippi for instance is not benefited by its reservoirs much below St. Paul, say 150 miles down stream.

Now if private capital begins building dams in the river, there will be no general system observed and chaos will result. Owing to the great cost and the divided control of the river between Ontario and Quebec, companies would often pen up only one side of the stream. This would ruin the river for navigation and an attempt to use the other side for power would be met with law suits and great construction difficulties.

Private dams take no heed of power possibilities above and below their immediate site and the money is not always available to make them strong beyond chance of accident. Inspection would be lacking both as to upkeep and as to the control of the water flow and riparian rights.

The bed and sides of the Ottawa river are largely rock and naturally suggest the idea of rock-fill dams as set forth in the Georgian Bay Report. Two dams of this type have already been built in connection with the storage and are giving satisfactory results, as are also those that have been constructed across the Winnipeg river years ago.

This report deals largely with a record of the construction work done by the Department as days' work at Quinze and at Timiskaming. Both these places presented difficulties beneath ground surface that could not be determined before the work was opened up. The troubles at both places were greatly increased by cold weather conditions. This direct work imposed heavy responsibilities upon the engineering staff, but the work has been accomplished without law suits and the experience has trained several assistants for the future work of the Department.

Several valuable reports are included from assistants, especially that of Mr. Johnson with regard to stream measurement and the relation between precipitation and run off in the valley. The temperature records of air and water are interesting and show that the water takes up most of its heat during June. The amount of work done by the sun in raising the immense bulk of the spring flood, over 20 degrees in temperature, is astonishing.

The office work during the year has been the preparation of numerous diagrams in connection with metering, as well as the calculations. The mile to the inch sectional map of the valley has been advanced somewhat and the large Hull-Chaudière plan corrected to date.

I have the honour to be, sir,
Your obedient servant,

C. R. COUTLÉE,
Enaineer-in Charge.

Plate No. 1

Public Works, Canada

UPPER OTTAWA STORAGE

PROFILE OF THE OTTAWA RIVER

MONTREAL TO KAKABONGA

SHOWING POWERS CREATED BY NAVIGATION SCHEME AND COMPLETE STORAGE SYSTEM

(Not Including tributaries)

i.e. 10.000 SQ. MILE FEET OF RESERVOIRS

Giving 30.000 Cub feet per second of constant flow at Mattawa

31.000	"	"	low stage " Des Joachims
34.000	"	"	" " Chats
35.000	"	"	" " Ottawa
45.000	"	"	" " Pte Fortune

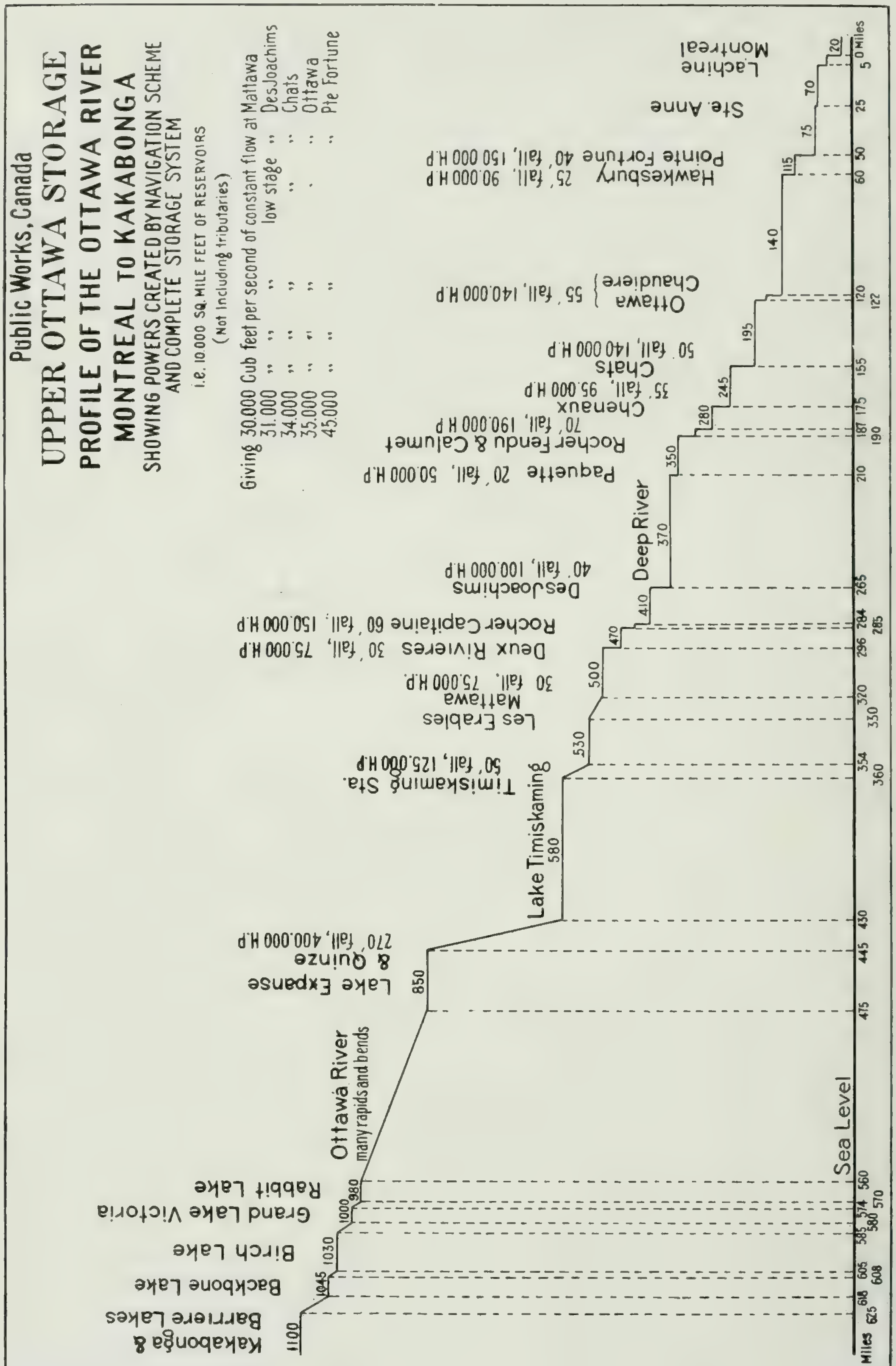
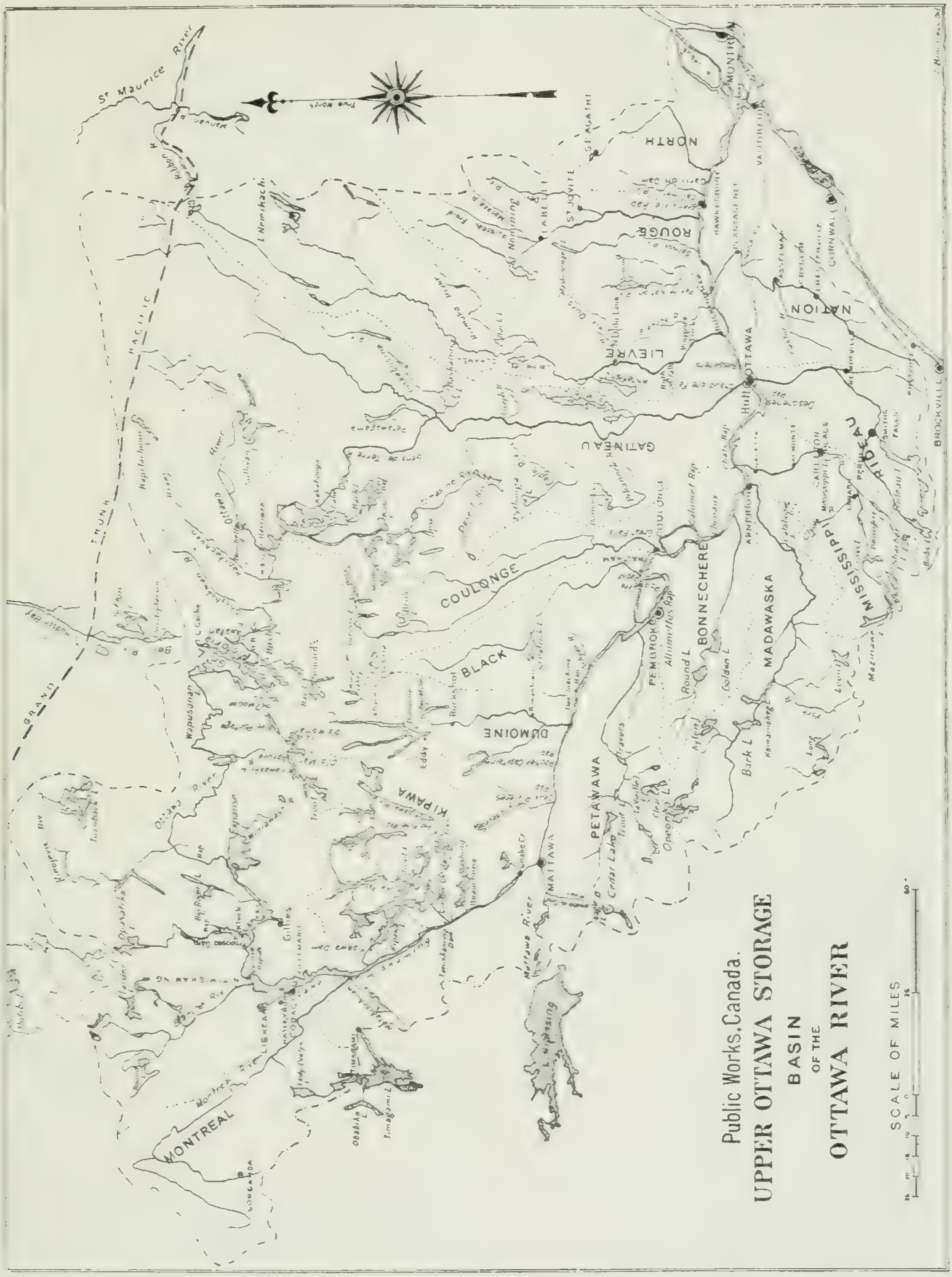


Plate No. 2


St Maurice River
NORTH
ROUGE
LIEVRE
GATINEAU
COULONGE
BONNECHERE
MADAWASKA
PETAWAWA
KIPAWA
DUMOINE
BLACK
MISSISSIPPI
RIDEAU
GRAND
MONTREAL
OTTAWA
Public Works, Canada.
UPPER OTTAWA STORAGE
BASIN
OF THE
OTTAWA RIVER
SCALE OF MILES

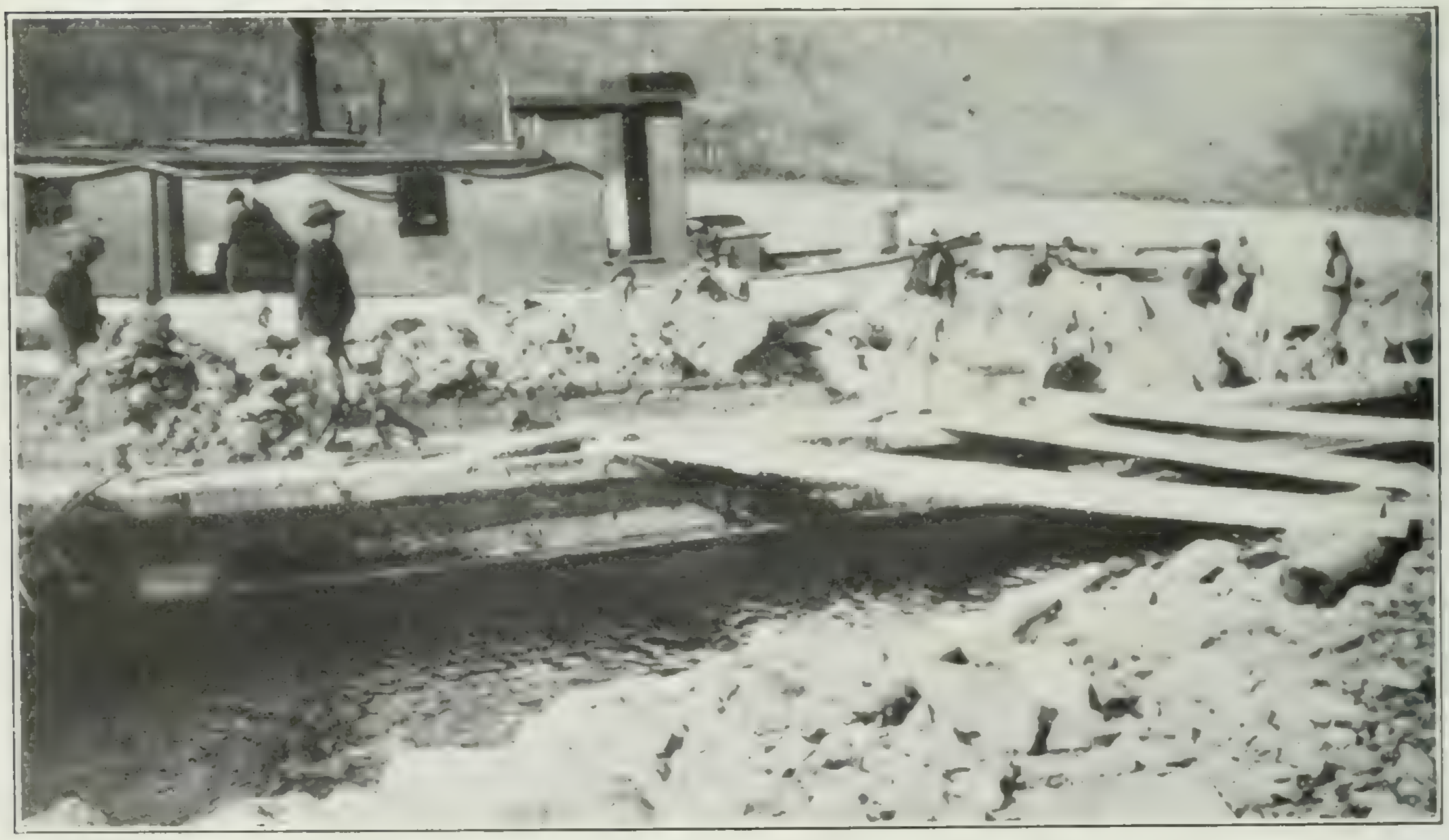
Timiskaming Dam.

The design for this dam was worked out between March and July, 1909, the idea being to keep the lake surface at ordinary high water level and draw down as near as might be to 20 feet below this surface. In order to draw down the lake, and at the same time secure a flow in the neighbourhood of 20,000 cubic feet at lowest water, it was necessary to enlarge the outlet by increasing the size of the Ontario channel.

This channel had heretofore only passed water at high stages of the lake and the low water flow from the lake approximated 5,000 c.f.s. It will be seen from this what a far reaching improvement was contemplated.

The Ontario channel proved to be very difficult to dredge owing to the layer of large boulders—8 and 10 feet in size—that had been tightly packed over its surface. Tons of explosives were used in this work as detailed further on in the report, but not a single loss of life occurred, a record for which every one concerned is to be most heartily congratulated.

The Quebec channel, even at low water was a formidable rapid and in high water its volume and swiftness became almost an insurmountable obstacle. The first attempt to build a cofferdam was interrupted by the unusual fall rise of October, 1910, but work was resumed again by the contractors and the pit below the cofferdam laid dry about March, 1911, after which some excavation was done in the foundation. Unfortunately the spring freshet came very early and the work was flooded from the downstream side, a week or two after which the upper or main cofferdam was destroyed by scouring away of the river bottom. No further work was done by the contractors, and in August, 1911 the construction was taken over by the Department of Public Works.



No. 1—Unloading scow of blue clay to be used in staunching cofferdam.

The difficulty being largely a matter of cofferdamming the main channel of the Ottawa river, the writer at once engaged Mr. Joseph Filion, whose long experience ever since the building of the Carillon dam in 1875, has made his name familiar to contractors over the whole of Canada. The first matter to be arranged was a supply of timber and in this every assistance was given by Mr. J. R. Booth, the veteran lumberman of the Ottawa.

Owing to the season of the year, it was impracticable to go into the woods and cut the timber required, so it was decided to buy saw logs in the river. Quantities of these were heaped upon the boulder shores in the vicinity of the dam, and Mr. Filion set up a small saw mill which rendered excellent service throughout the period of construction. Instead of building the cribs with round logs, flatted timber was used because much better work is secured with less cost for labour. The flatting of timber with axes is not economical at the present time owing to high wages.

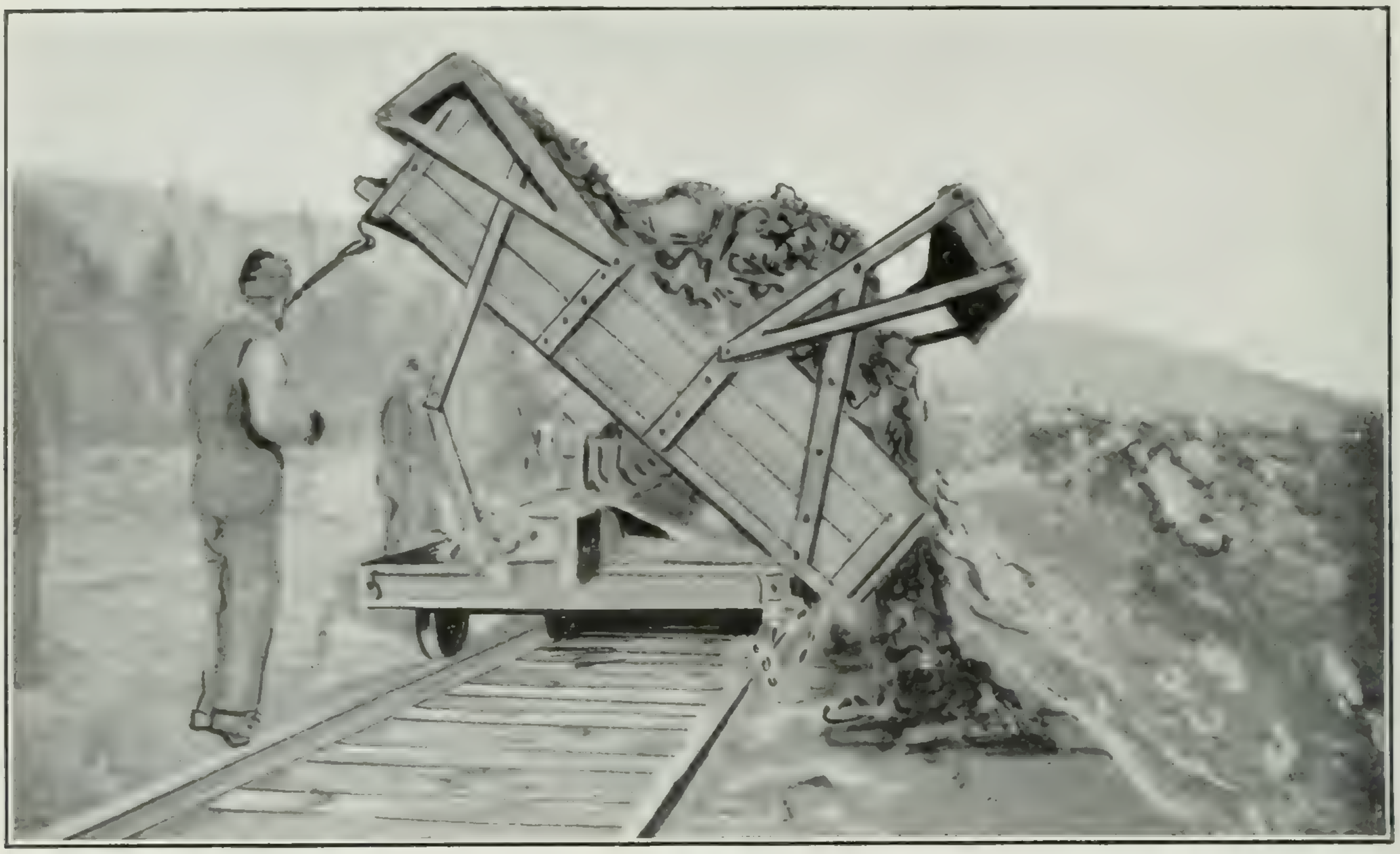
The iron drift bolts were 7-8 inches round, pointed and with upset head, the length being 18 to 24 inches. About 25,000 pounds were used altogether.

To fill the wooden cribs it was necessary to secure a reliable supply of broken stone and after considering several places, a quarry on the east side of the lake about a mile above the dam, was chosen and a force placed getting stone. This was conveyed from the quarry to the cofferdam upon scows, which were towed by an alligator steamboat rented from the Improvement Company.

Soundings were taken to determine the shape of the river bottom upon which the cribs were to rest and the bottom of each crib was built to fit its particular place. This was a difficult matter, as there were nests of large boulders 8 and 10 feet in diameter over the whole area.

For general information it may be said that a crib is a crate formed of 10 to 12 inch timber built in courses "log cabin" fashion. In this case the cribs or boxes were 20 to 30 feet in the direction of the current and 18 to 30 feet long, the depth averagi ıg 20 feet. Each crib had cross ties between the up and down stream faces, at 6 feet intervals in each course and longitudinals which gave rigidity leaving a series of pockets into which the stone filling was loaded.

To set the individual cribs in place in a rushing current 20 feet deep was a difficult matter and for this purpose an anchor crib was built and sunk above the line of cofferdam. Each crib was built on shore to a height of 12 feet or so, then launched, attached to the anchor crib with a $1\frac{1}{4}$ inch wire cable, and gradually lowered down stream to the line of cofferdam. By side lines of wire cable leading to the island and the Quebec shore, the crib was brought to place touching the one last set. As the channel was narrowed by placing cribs in this fashion, the current increased to a rush of great force. This condition was provided for by a heavy wire rope tackle attached to the end of the $1\frac{1}{4}$ inch cable and passed around the drum of the alligator's winding engine. The power thus secured was ample, the alligator being well anchored, and cribs could be set within an inch of their proper line.



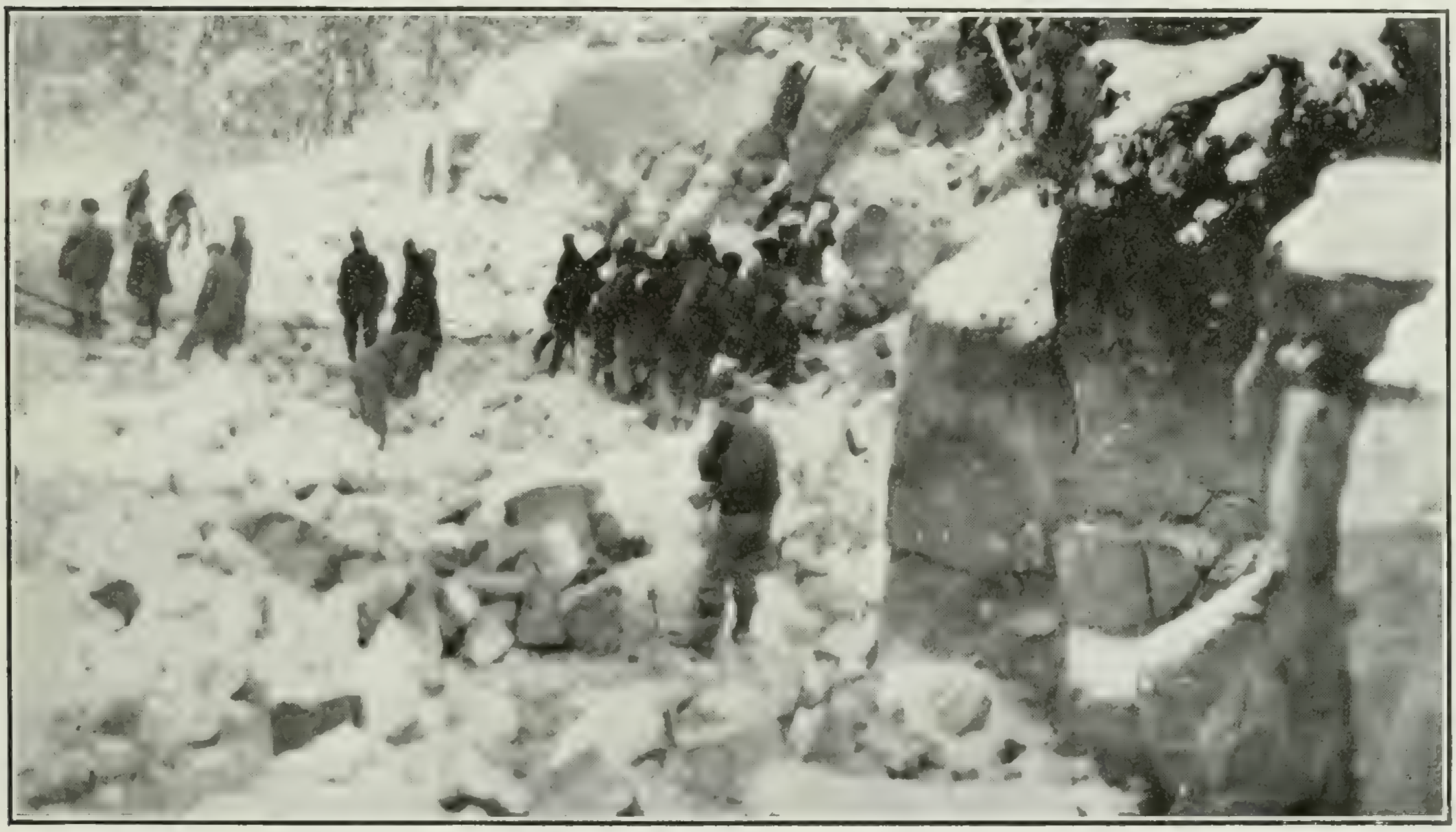
No. 2—Type of dumping car used in steam excavation work.



No. 3—Junction between old and new cofferdams before staunching, December 15, 1911.

As the Quebec channel was blocked by the placing of these cribs, which were of course heavily loaded with broken rock, the water tended to force beneath them. This actually scoured out the sand from between and underneath the closely packed boulders that formed the river bed and moved them down stream. The strength and heavy loading of the cofferdam cribs saved them from dislodgement, but they settled into the washed out bottom, leaning always up-stream.

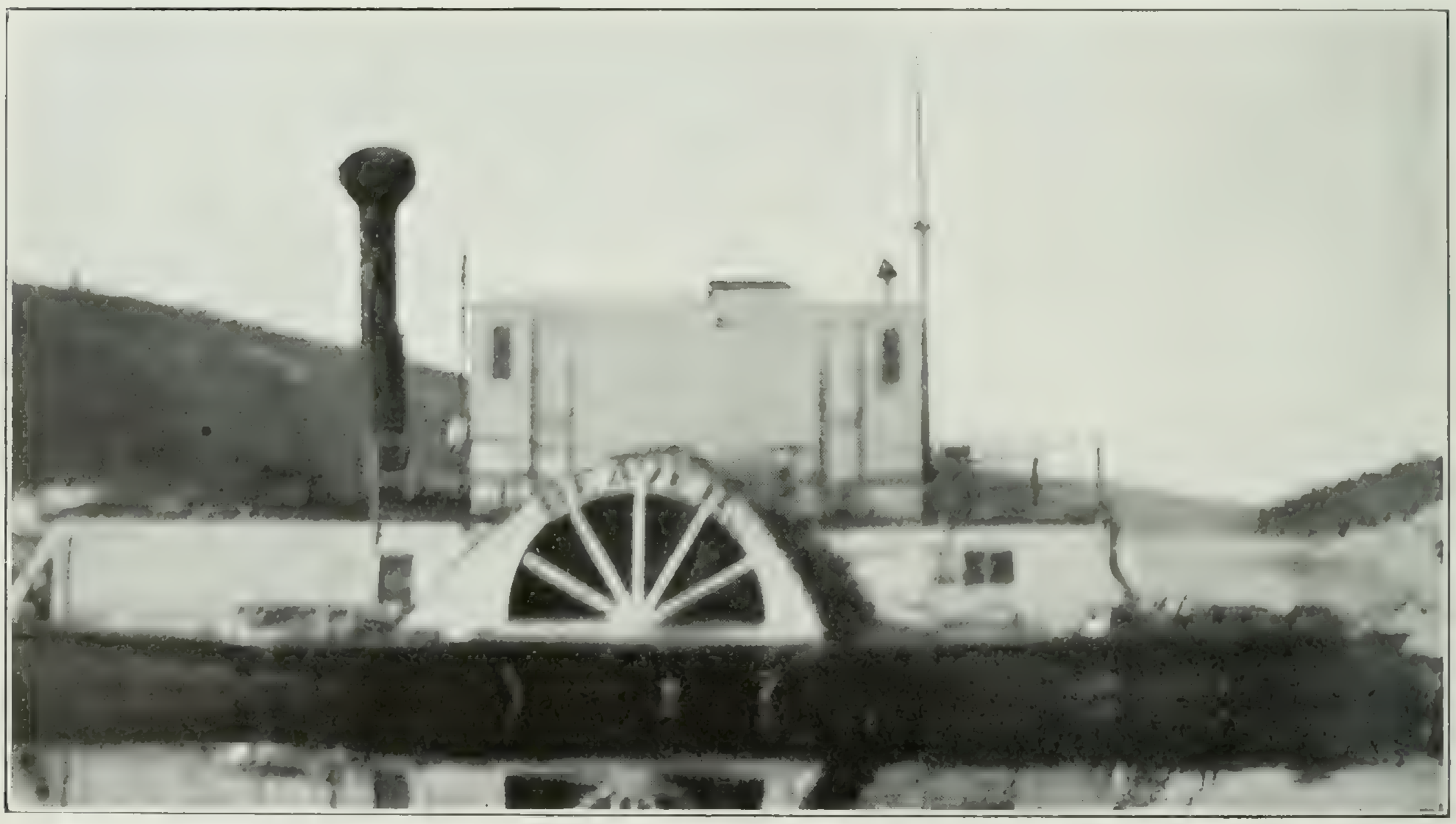
At places the first soundings showed 16 feet depth, but the scouring actually increased this depth 12 feet. It was necessary to increase the height of some of the cribs to 28 feet, while they were in place and still settling forward, so instead of being vertical the face was overhanging up-stream. When the key crib was at last placed in the current, the upstream face of the cofferdam was irregular and consequently the matter of sheeting it with plank was rendered difficult.



No. 4—Quarrying stone to fill cofferdam, December, 1911.



No. 5—Portable saw mill which flatted timber for the cofferdam and cut long plank used for the facing.



Nc. 6—Alligator steamboat used for placing cribs in cofferdam and for towing stone from the quarry about one mile from the dam.

To secure a vertical and fairly straight face, patching had to be resorted to. Where the face was overhanging, a triangular piece, wide at the bottom and tapering to a point at the top, was set in place. The wedge shaped frame was put together on shore according to measurements and then floated out to place. A pocket at the bottom filled with stone served to make it float vertically, but to sink it onto the bottom while the current pressed it hard against the cribwork already set, was a matter of considerable difficulty. Mr. Filion accomplished this by a system of heavy levers and repeated blows from a vertical ram.

The face being fairly even, long planks were forced down vertically each jointing closely with its neighbour so as to secure a tight face. These planks were about 2″ thick and were driven into the river bottom, but the boulders prevented sufficient penetration to insure tightness.

The convenience and economy of a portable mill upon the work was particularly noticeable in connection with this sheeting. Planks over 30 ft. in length were sawn by it as required when it was difficult to secure anything over 16 ft. long at the mills.

The joint with the old work was an interesting matter, as when the last crib was set, an irregular V shaped opening still remained through which the water gushed with great force. Measurements were taken however, and a vertical wedge, hewn out to an accurate fit, was rammed down to place effectively closing the leak.

During November the sheeting of the cofferdam was completed and doubled; a diver being constantly employed to make as snug a joint as possible with the bottom. Owing to the open boulder material of the river bed it was necessary to deposit a large bank of earth in front of the cofferdam. This material was excavated from the west side of the island by steam shovel and hauled in cars, which dumped it in front of the cofferdam. In addition to this, clay which had been procured by dredging during the preceding autumn, was also deposited along the upstream side.

The filling however did not prevent the current scouring beneath the cofferdam cribs, and Mr. Filion was obliged to build and place five new cribs along the central part of the face of the cofferdam. These cribs were sheeted and finally a good bank of earth was built up in front of the whole cofferdam.

In January another cofferdam was built across the river below the dam site to defend the proposed structure from the back water of Gordon Creek. A pocket dam was also built across just below the main dam to impound a small basin and thus divide the head against the main cofferdam. From this basin, a flume 6 feet wide, was led across the pit to discharge the leakage over the lower cofferdam or counterdam as it was called.

A battery of steam pumps consisting of two 10 in., an 8 in. and a 6 in. centrifugal machine was set up during the month and worked night and day. It was not however until the middle of February that the water was under control and even then, the least accident to the pumps necessitated a temporary abandonment of the work as the leakage gained very rapidly.

The result of rising and falling water in the excavation pit during severe winter weather was to make successive layers of ice that had to be chopped out by hand labour. Finally the steam shovel, a 70 ton Bucyrus machine, was lowered down into the pit and earth excavation begun. At first the work was very slow and tedious as the water would rise owing to the least trouble with the pumps and flood the excavation tracks. The men constantly worked with hip boots, often over their knees in the icy cold water till driven out by some exceptional rise. It was often necessary to bolt the track connections with bare hands in water that reached above the elbow, yet it is a pleasure to state that practically no sickness occurred and that the men were always willing and ready.

Drilling and blasting was constantly necessary to break the large boulders, 8 and 10 ft. across, which cropped up in front of the steam shovel. For this the new explosive "Blaster's Friend" was used and there were no accidents, mainly due to the fact that it does not freeze and so the dangerous process of thawing was eliminated.

While contending against the water and extraordinarily cold weather, an added trouble was the coal supply. At times there was only a ton left to run the pumps and slabs had to be used to eke out the fuel supply. The efforts however of my assistant, Mr. Gray, and the Departmental officers at Ottawa, and the kindness of the Canadian Pacific and Grand Trunk Railways in lending coal that they could ill afford to spare, carried the work through.

During the cold weather there was a constant menace to the work due to the phenomenon of frazil ice. Gordon creek, which enters the Quebec channel just below the counterdam, is a very rapid stream that does not freeze over although cooled far below the freezing point. Ice under these conditions forms into needlelike crystals which drift along like so much chaff and form a spongelike mass as soon as they reach still water. This spongy slush dams the waterway to the bottom. The excessive amount of condensing steam from the various machines hampered the work by obscuring signals and steam and water pipes were constantly freezing.

The water from Gordon creek therefore piled up and threatened to overflow the counterdam, unless a clear way could be maintained through the slush that blocked its natural outlet. Day after day a force of men was kept from daylight until after dark maintaining a canal through this ice jam with explosives. An hour's neglect meant serious consequences and constant vigilance alone saved the situation.

Concrete work of the permanent structure, for which all the preparations of four months in cofferdamming and excavation was but a prelude, was begun in February. Arrangements were hardly ready for this work but it was imperative to push matters forward and the writer remained resident on the dam till the end of April. Every day some permanent work was done, even if only a few yards, with the result that considerable speed in concrete laying was possible when the preliminary work allowed a full force being employed. Much concrete was deposited under 2 and 3 ft. of water and during very severe weather, but invariably with good results. The cement was of a very superior quality and the machines, water and materials were thoroughly heated with steam.

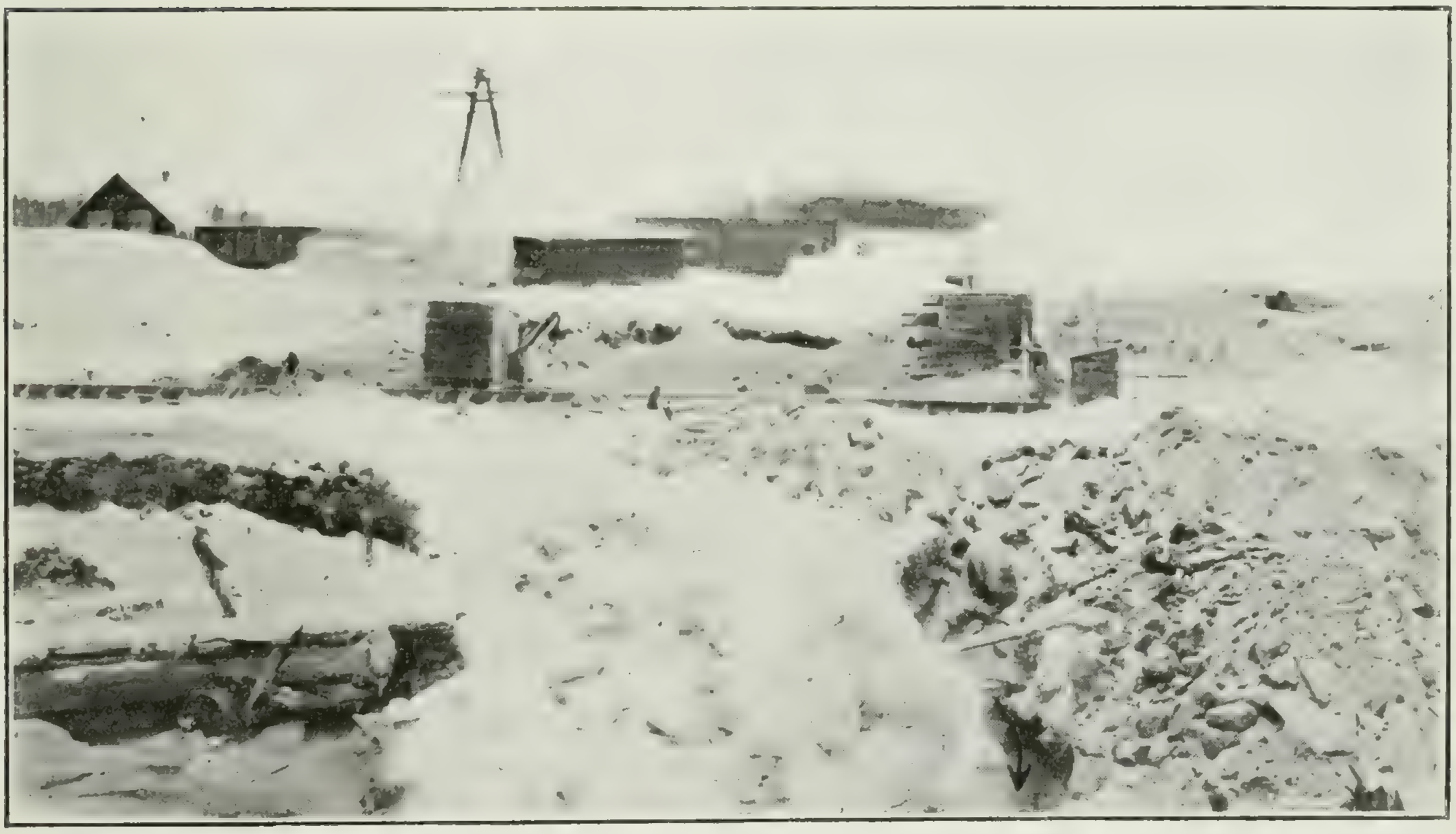
The foundation generally was a mass of boulders embedded in compact sand, but 25% of the area toward the island side was sand with only occasional boulders. This was so saturated with water that little springs boiled up all over it, and the sand drifted off in the current when disturbed. To cover this with a concrete slab was difficult as scouring constantly took place along the edges. It was found after trial that it was impracticable to drive sheet piling owing to the stones that were met with, which forced the piles in all directions.

Owing to the slow rate of excavation it proved best to lay the foundation slab in unconnected pieces at first and fill in afterwards as occasion allowed. In like manner several of the piers were built before the east end of the platform had been laid, but no difficulty was found in making good junctions.

At first the whole structure, abutments and piers were built only to elevation 583, or 10 ft. below final height. This was high enough to withstand flood water and in case of an early rise it was thought best to bring everything to a safe height. Time however allowed of finishing the whole structure to full height by the end of April. Since then the bridge across the sluices has been completed and the work is now being put into a neat and finished condition. The detailed report of Mr. Donnelly, resident engineer, follows.



No. 7—Excavating for abutment of dam, February, 1912. Note boulder material and flow of icy water from trench pump.



No. 8—Drain through ridge of boulders laid up by current when cofferdam failed May, 1911. This had to be excavated by hand to lead drainage to steam pumps. Note timber platform covered by scour at left

Plate No. 3

PUBLIC WORKS, CANADA.

OTTAWA RIVER STORAGE

Plan showing

REGULATION WORKS

AT

TEMISKAMING

Quebec Channel and Construction arrangements

SCALE IN FEET

Romeo Brault, del.

QUEBEC

ONTARIO

ISLAND D

Canadian Pacific Railway to Mattawa

Gordon Creek

Carrying Tramway

Counter Cofferdam Top Elev 575

steam Pumps

Mixer

Crushed Stone

Flume 6 feet wide

Cableway

waste dump

Embankment across Island to Ontario Sluices

Sand

Crushed Stone

Excavation track to waste dump Grade 17%

Pocket Dam Top Elev 576.5

Mud Crusher

Part built Sept-Oct. 1910 Top Elev 590

Jan 1912

Excavation track to borrow pit

waste dump

Main Cofferdam Top Elev 583

built Sept. 1911 to

North

Stiff boom to log pass

Anchor Crib

Glance boom

Flow

Stiff boom to log pass

Anchor Crib

Glance boom

Channel Section at Counter Cofferdam

Elev. 575 570 565

Channel Section at Main Cofferdam

Elev 590 580 570 560

Horizontal Scale in Feet

C. R. COUTLÉE, ESQ.,
Engineer-in-charge.

SIR,—I have the honor to submit this report of the progress of the work at Timiskaming Dam, from April 1, 1911, to March 31, 1912.

Cofferdams and Unwatering.

In August, 1911, preparations were made to resume the unwatering of the Quebec channel. Of the old main cofferdam built in 1910-1911, 225 ft. remained and to close the channel the same length of new dam had to be built.

Lake Timiskaming was at a low stage, when this was commenced. In addition to this, a second or pocket dam and a counter dam were necessary.

The new work of the main coffer-dam, consisted of a squared and flatted timber, built in close cribs for the lower twelve to fourteen feet, and above open timbering. Timbers 12 x 12 in., 12 x 10 in. and 10 x 8 in. were used. The cribs were from twenty to thirty-five feet wide, measured with the stream and eighteen to thirty feet long.

The average height of cribwork was 20.5 ft.. to elevation 583.0. Cross ties were placed every six feet across the stream. The front of cribwork was sheeted with double thickness of two inch pine, except centre section, where first layer was 4 in. x 12 in. The stone ballast filling used, was all man handled stone, from Ontario channel surface and the quarry above the Bellevue Hotel.

The channel bottom consisted of large glacial boulders, closely packed over a layer of two to four feet of small gravel, under this was river sand. It was impossible to have the cribwork fit close to the bottom and though toe of sheeting could be made tight, the water seeped through the gravelly bottom, further upstream. About 500 cubic yards of good clay, secured by dredging, was deposited by scow, along the toe of the sheeting. Over this 5,000 cubic yards of good loam was deposited, to within a few feet of the top of the sheeting. This was excavated by steam shovel and carried by 6 cubic yards cars, operated by a steam hoist.

An anchor crib was first built above the coffer-dam site, to be used as a holdfast in placing cribs. The cribs were built on shore to a height of twelve feet, launched and a few rounds of timber added, then lowered into place by wire rope tackle. Much difficulty was encountered in the centre of the channel, where about 100 ft. of cribwork scoured under.

The top four feet of cribwork was continuous work, with joints broken as much as possible.

While the main coffer-dam was being finished, a counter dam, 300 ft. long, 8 ft. wide and an average height of 7 ft. to top of sheeting, was built. Small timber, averaging 6 x 8 in. flatted, was used for this dam. The front filling, principally sand, was secured from a waste pit at the island shore.

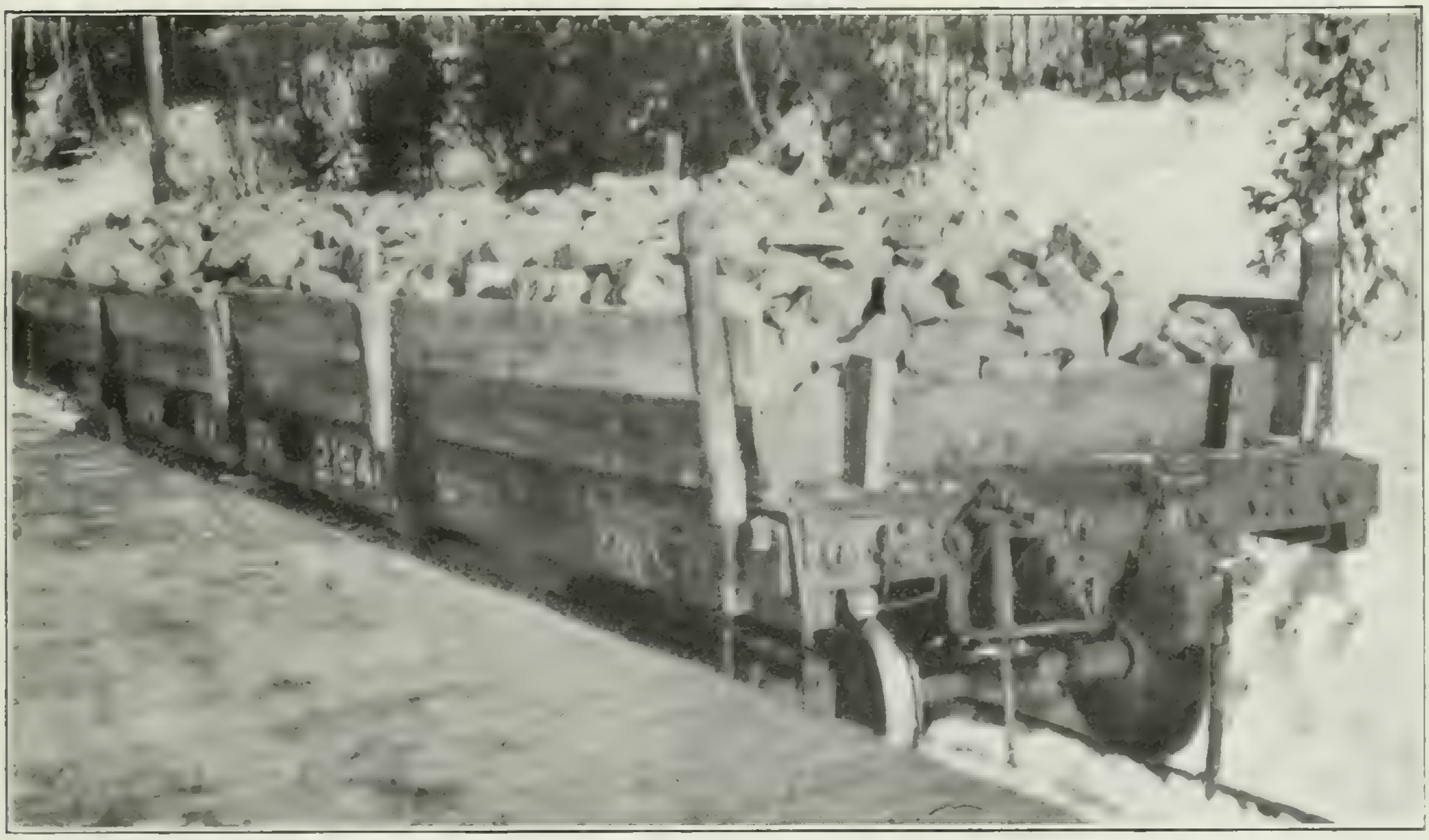
When these two coffer-dams were made as tight as possible, two ten inch centrifugal pumps were set up and started, but did not lower the water. Later, an 8 in. and a 6 in. pump were operated, but unwatering was insufficient.

Part of the old pocket dam remained, this was then extended to the Quebec shore and the overflow carried off, in a 6 ft. flume. The pumps then handled the leakage from the pocket dam and the construction work was proceeded with. It is very important in coffer-dams, on bottoms of this nature, to secure a good

key into the banks of the stream, especially when working in cold weather. The crust invariably freezes and will scour under, making the leak difficult to stop later. A trench should be dug, at the upper side of the cribs, the sheeting placed at the bottom of this and good clay or loam filling tamped into place. Another danger, is the leaving of cribs open or close in place on the bottom for any length of time, without sheeting and depositing filling at the toe. The cribs do not fit the bottom and consequently a scour is concentrated under the crib and will wash out the foundation, allowing cribs to settle in front.



No. 9—Seventy-ton shovel being lowered into river bottom down 12% grade. Mr. Donnelly arranged all tackle for this February 14, 1912.



No. 10—After January, 1912. stone for concrete work was brought to the dam on flat cars which were loaded by teams hauling a short distance from the quarry.

Piledriving.

It was considered that sheet piling the Quebec channel bottom would be necessary, at the west, or island side. An "A" frame pile driver was secured with a 2,000 lb. hammer. This was rigged up with a steam hoist. Pine and spruce sawn piles 10 x 8″ and 8 x 8″ were used.

Operations were commenced in the island abutment and about ninety lineal feet of sheeting driven. The material proved very hard for driving and piles penetrated but 6′ to 8′ were very irregular. Many boulders were encountered in this material and no tight resisting face to water could be secured. A ¾″ jet, supplied by a 1½″ Duplex pump was tried, but as this could only be let down on the front side, it merely led the foot of the pile away from that last driven, though the driving was much easier. This work was given up as impractical, owing to the stony nature of the bottom.

The driving was tried, only where the top layer of boulders had been removed.

Excavation, Ontario Channel.

The steam shovel was brought over from the Quebec channel and placed excavating, on the west shore of the Ontario channel. The work was confined in that portion of the channel which was dry, a ridge being left to keep the water from the shovel pit. The excavation was wasted, on the west side of the Ontario sluices. The material was principally sandy loam, covered with broken boulders and in places near grade, hardpan was excavated. The surface boulders had been blasted in 1910. The dump cars used were two side dump pattern, of 6 cu. yd. capacity and operated by a single cable from steam hoist. The hoist was placed at the crest, between the dump and the shovel cut and the three car

trains ran both ways by gravity. There were 39 actual working days at this work. 7 Sundays and 5 days stops for repairs. In this time, 11,000 cu. yds. were excavated, it being necessary to remove the shovel on the November 18, owing to the water entering the cut from the channel.

Excavation, Quebec Channel.

The steam shovel started a borrow pit, alongside these cuts at a higher elevation, for coffer-dam filling, on December 26.

On January 20, the steam shovel was moved across to the Quebec channel and was lowered to Quebec sluices foundation pit, on February 17. Much care had to be exerted here, the grade being 17%. Large steel blocks, double and treble, with six returns of ¾ in. wire cable to a steam hoist, were used in lowering.

The material here was principally frozen gravel and boulders, with some frozen sandy loam. In one month two sets of new teeth were dulled. About 2,900 cu. yds. were removed from the foundation pit. Some of this was cast to the north of the upper apron, the greater portion being hoisted out in cars. This last was taken up the steep grade and dumped, at the head of the island. An additional 900 cu. yds. were taken out, by pick and shovel work and hoisted to south waste pile with derrick. The total excavation was 3,800 cu. yds.

Ice.

There was much extra labour in the Quebec foundation pit, owing to the large layer of ice that covered the entire pit. In places this froze to a thickness of over 5 ft.

The continual changing of the water level for a week, during the cold weather formed much new ice, after certain sections had been cleared. Approximately 2,500 cu. yds. of ice was removed by steam shovel, derrick and cable-way.

Below the lower or counter-dam, Gordon creek entered the channel. Though the flow was not over 1,500 c.f.s. a clear channel had to be blasted here all winter. The channel froze to the bottom and the sides of the artificial channel were walls of solid ice, from 5 to 8 ft. thick. There was continually a chance of the Gordon creek water backing up and overtopping the counter dam.

Quarrying.

A quarry was operated above the Bellevue Hotel, on the Quebec shore. Rock was obtained here and broken for use in crib filling and to be crushed for concrete.

Sand.

An excellent quality of coarse sharp Ottawa sand was secured from a pit, below Gordon creek falls, on the Quebec shore. This was teamed to the dam site over winter roads.

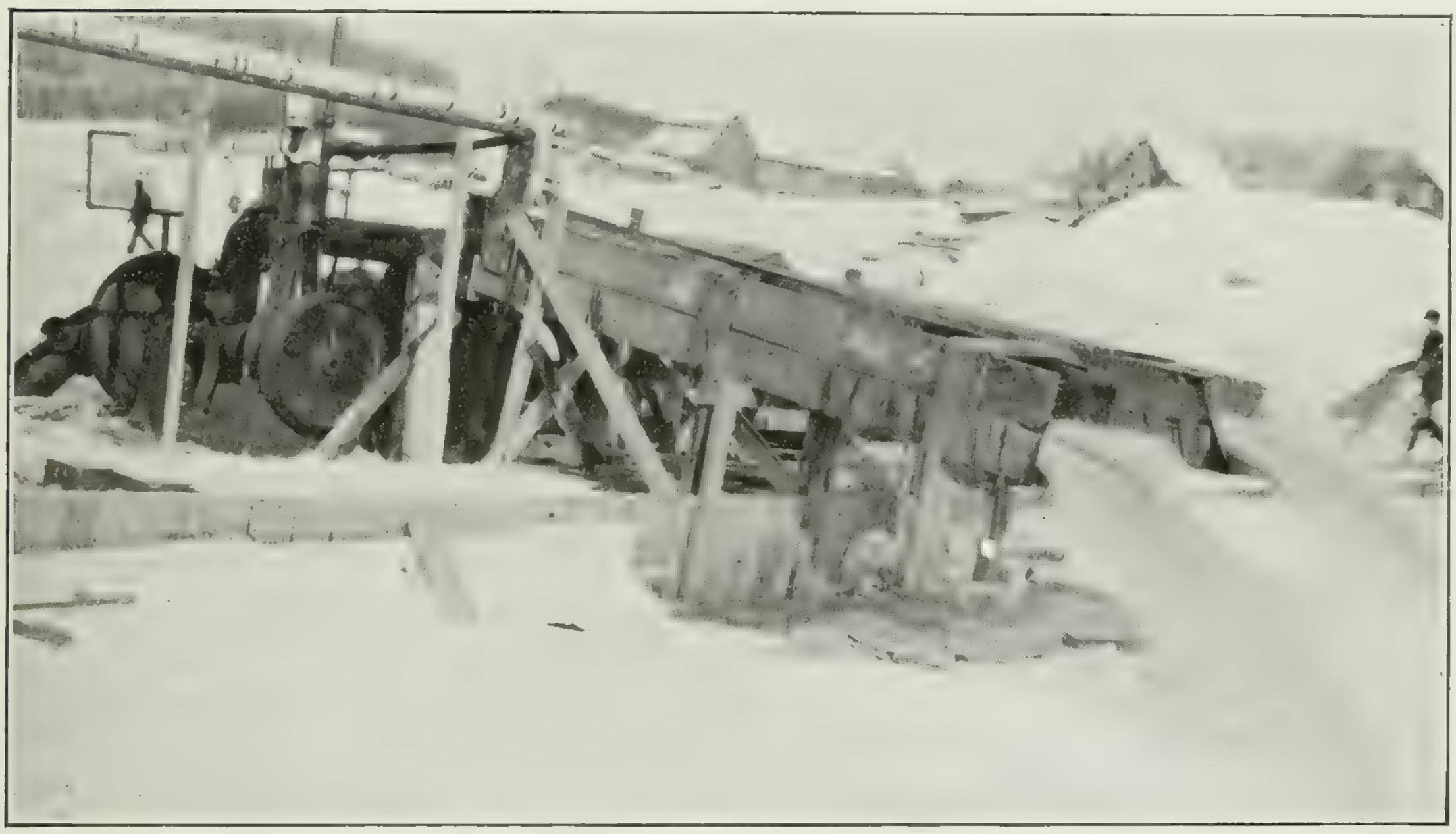
Concrete.

The Quebec sluices consist of 11 piers and two abutments. Of the piers 9 are 23 ft. long at top and 40·4 ft. at bottom, with 3 to 5 batter at the back. Two have extra 8 ft. in length at back, for height of 17 ft., for side walls of the log pass. The sluices are all 20 ft. and are closed with 18 x 18 in and 15 x 15 in.

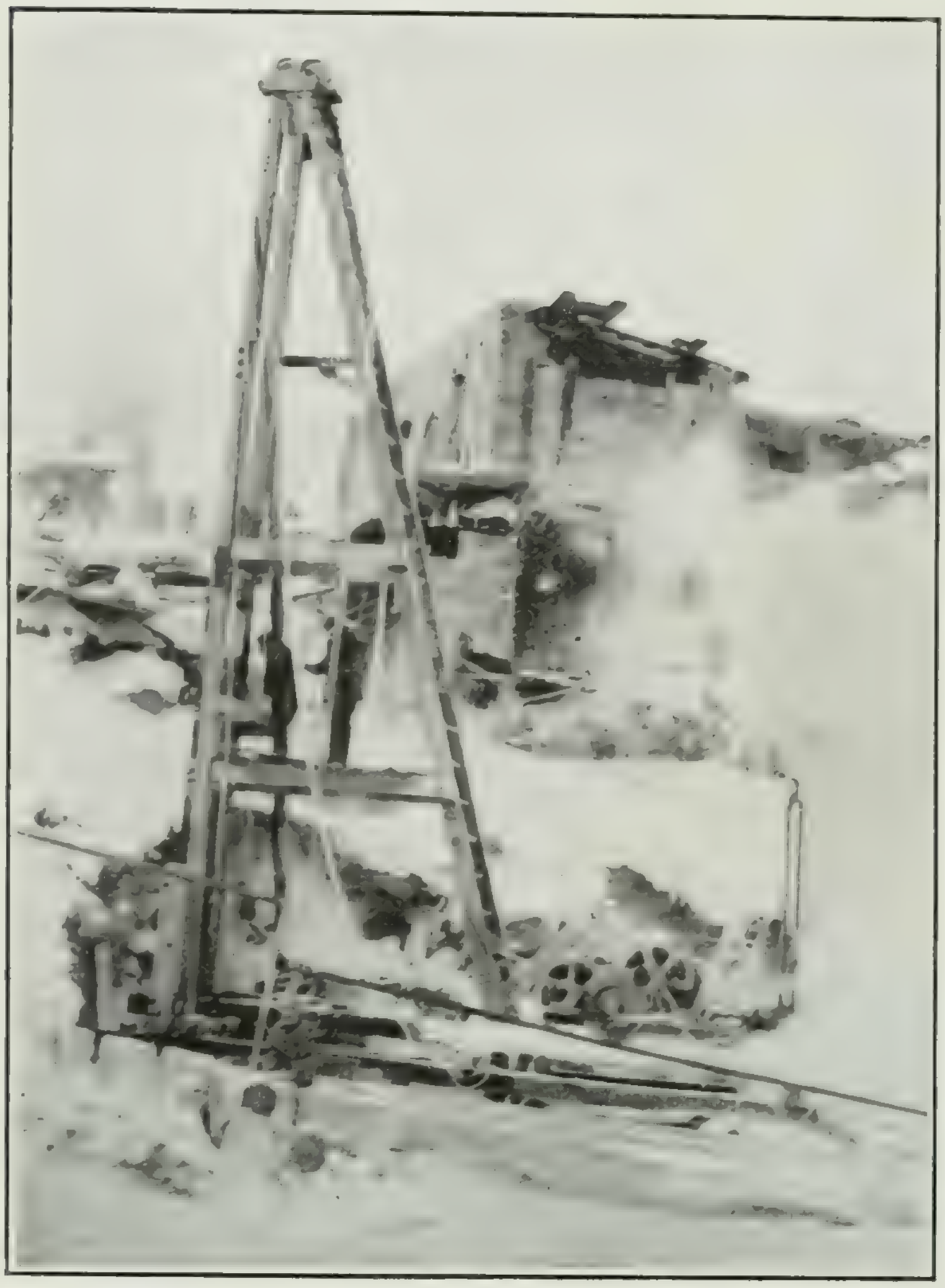
B.C. fir stop logs held in a check up the inside of piers. The abutments are U shaped, 48·5 ft. long and 25·5 ft. wide, with 5 ft. walls. The sill level is elevation 566·0 M.S.L. Canadian System, and top of piers elevation 594·0. The piers stand on a concrete platform 3 ft. thick, extending from 22 to 26 ft. up stream from nose, to 12 ft. down stream from the heel. A cut off trench from 7 to 9 ft. deep extends across under the platform, one foot ahead of the pier nosing.

The concrete mixture used was 1, 3 and 5, one of cement, three of sand and five of crushed stone. Three batch mixers were used, two ½ cu. yd. Smith's and 1 cu. yd. Ransome. When the concrete work was commenced, there were 4,000 cu. yds. of crushed stone left by the contractors and 2,000 cu. yds. sand. In all, 6,300 cu yds. of concrete were laid.

In handling from mixers to place, a cable carrying a 1 cu. yd. bottom dump bucket was used, two wheeled one man concrete carts were also used, for filling lower 17 ft. lift of piers. The cable-way bucket dumped directly on bottom where possible and otherwise into a large hopper, from this the concrete was distributed with concrete carts. The concrete in the top half of piers was delivered



No. 11—Two twelve inch centrifugal steam pumps set up January 20, 1912. To this battery were added an eight-inch, a six-inch and a four-inch before the water was conquered.



No. 12—Pile driver in island abutment of dam. Stray boulders in the sand prevented the driving of sheet piling and it was abandoned.

by the cable-way bucket, which dumped on platforms at top of forms and was then shovelled into forms. Behind the island abutment the 1 cu. yd. Ransome mixer and "B" ½ cu yd. Smith mixer were placed. Both were fed by one derrick which reached the largest store of sand and stone. The derrick skips emptied into sand and stone hoppers, which fed into measuring boxes below. Below these boxes were the mixers. On the Quebec shore, in the rear half of the west abutment, the other ½ cu. yd. Smith mixer "C" was set up. This was fed by two one horse dump carts, which were divided into sand and stone compartments. All water for mixing was heated.

A log pass 45 ft. wide was left in the Quebec channel, spanned by a 33 in. plate girder bridge. The floor on this bridge is concrete, the remainder of the sluices being decked over with 3 in. white pine, on 6 x 12 in. B.C. fir stringers.

Boulder slope walls protect the banks of the channel, above and below the abutments.

The progress of work is given in detail as follows·—

April, 1911.

In the Quebec channel the contractors had their unwatering under good control and the construction work was commenced. The surface of the channel had been drilled and blasted, as the water receded and excavation was removed, by the cableway and two hoists. The cableway stored rock for crusher purposes, one derrick wasted to bank and the other derrick filled excavation cars, hauled to the head of the island dump. In all, 1,090 cu. yds. common, 163 cu. yds. rock and 247 cu. yds. of boulders were removed this month.

Some trench work was done under the island abutment walls and a few yards of concrete laid. It was necessary to use sewer sheeting, the bottom proving very sandy.

Lake Timiskaming level rose steadly from 6 to 8 in. per day, the coffer-dam pit was soon flooded from front and rear. All work in this channel was suspended at the end of the month.

In the Ontario channel, considerable improvement was made in blasting the banks, with large shots. The scouring action of the swift current here, carried away large quantities of material. Lake Timiskaming rose from 583·1 on the 1st to 588·6 on the 30th. The corresponding readings below the Ontario sluices were 569·4 to 574·2. The atmospheric temperature averages at Timiskaming were 41·5° F day and 31·4° F. night and the water temperature 35,97° F. The total rainfall was 1.75′.

May.

Practically the entire contractors' force was paid off, leaving a few to continue enlarging the Ontario channel section. On May 4 the East section of the main coffer-dam gave way, near the Quebec shore. The head on this section was but half that, on the centre channel portion.

It seems reasonable to suppose that the water, which had been passing over the top of the dam, scoured the channel bottom at the heel of the cribwork. Lake varied from 589·6 above and from 574·8 to 578·1 below. The average temperatures were 73·1° F. day and 52·4° F. night and the water temperature 39·71° F. The total rainfall was 2·495 in.

June.

In this month, Ontario channel improvement was carried on with a few men. A large jam of logs stopped the Ontario sluices for a week.

Investigations were made on Lake Timiskaming to ascertain if lands of any extent would be flooded, below the head of the lake, when the lake should be placed in storage.

Lake levels 585·6 to 582·3 above and 578·0 to 576·2 below. The average temperatures were 69·5° F. day and 60·4° F. right and the water temperature 53.71° F. The rainfall records are not complete.



No. 13—Excavating ice and snow, end of January, cribwork cofferdam in background.

July.

On July 17th and 18th, the Ontario sluices were closed to check run off. The lake fell from 582·0 to 578·5 above and 575·9 to 571·6 below. The average temperatures were 75·6° F. day and 65·6° F. night and the water temperature 64·07° F. The total rainfall was 3·105 in.

August.

In August instructions were received, to resume unwatering the Quebec channel.

A complete inventory of the contractors' plant was made, including machinery, plant, stock, tools and buildings.

All materials were measured or weighed and entered on a list at their actual cost to contractors. All stocked lumber, concrete forms and buildings were measured. A valuator examined all plant and made an estimate of its present value. The camps were all renovated and disinfected.

These buildings required outside tarpapering and were whitewashed and remodeled inside. A new cookery and mess hall was built.

It was difficult to secure timber for the coffer-dam, close to the work. Several trips on the lake were made, to investigate this supply. A crib gang arrived on the 22nd and a sawmill was secured and set up. The average number of men employed this month was 13.

The lake remained steady this month, elevations being 578·6 to 578·5 above and 571·5 to 570·8 below. The average temperatures were 71·5° F. day and 60·7° F. night and the water temperature 65·87° F. The total rainfall was 3·63 in.

September.

Some logs were secured on the island shores and sawn for various cribs and track ties. The valuator visited the works to look over the plant, etc. for appraisal.

The Department dredge "Queen", excavated about 600 cu. yds. of blue clay, at McMartin's Point; this was stored at Timiskaming for coffer-dam staunching.

The Ontario sluices were operated this month, in regulating the flow for the first time. The sluices were closed again at the end of the month. At the end of the month, the steam shovel was brought from the Quebec channel, to enlarge the Ontario channel. The excavation was confined to the dry portion of the channel, on the east side. This material was wasted below the Ontario sluices on this side.

An anchor crib was built 40 ft. x 25 ft. and placed above the Quebec coffer-dam site. This crib now holds one of the stiff booms, to the log pass, and this was first used in placing coffer-dam cribs. The 1st crib in the Quebec coffer-dam was placed on the 23rd and the stone filling was secured from the shores of the Ontario channel. The average number of men employed this month was 68.

Lake Timiskaming fell from 578·4 to 577·3 above and 570·8 to 570·2 below. The average temperatures were 57·4° F. day and 49·6° F. night and the water temperature 61·83 F. The total rainfall was 1·607 in.

October.

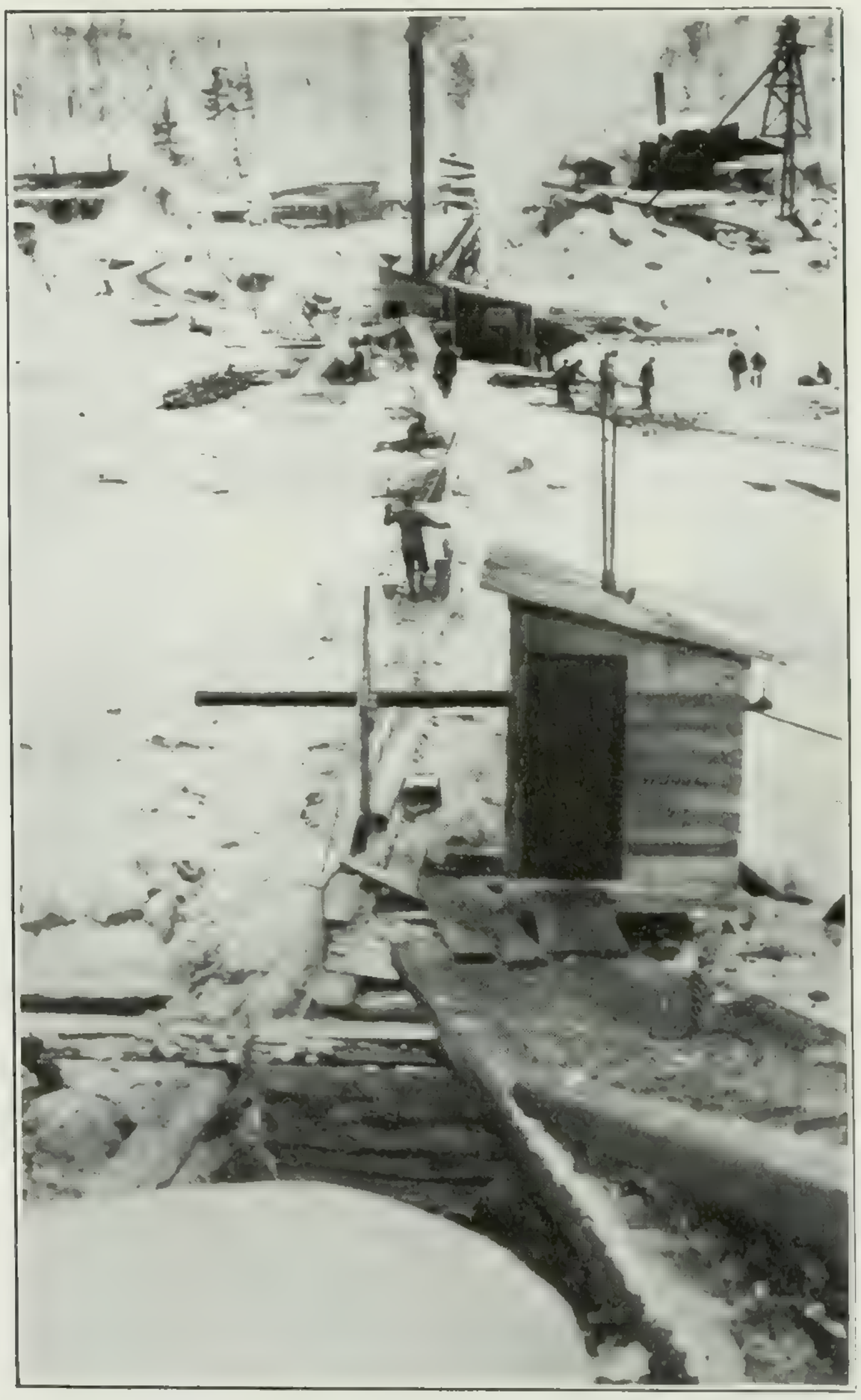
In the first week, the 2nd and 3rd, cribs were placed from Quebec shore, n main coffer-dam. Arrangements were made to have some timber delivered on work, for coffer-dam.



No. 14—Depositing earth upper side of second or pocket dam. Cribwork of main cofferdam is seen in backgroud.



No. 15—Quebec Channel—Clearing pit of ice, Jan. 29, 1912.



No. 16—Lower cofferdam defending pit against lower pool, and Gordon creek. Steam pump battery and men's quarters in background.

The steam shovel excavated 2,070 cu. yds.

The next week, all clay was delivered from dredge.

The 4th and 5th coffer-dam cribs were placed. As the coffer-dam extended into the Quebec channel, the Ontario sluices were opened.

Timber began to arrive on cars, during the third week. The 6th crib was placed in coffer-dam. The steam shovel finished the first cut and started the second, 940 cu. yds. being wasted to dump. Mr. Blue a id some men from the work, investigated the Opemican Narrows, to secure information concerning channel section, which it might be necessary to increase.

During the last week of the month, the 7th and 8th coffer-dam cribs were placed, making the total length of dam to date 150 ft. To near the end of this month, all filling stone was secured from the Ontario chanr el. On the 27th a quarry was opened, above the Bellevue Hotel. The steam shovel encountered some hard pan this week and the total excavation was 1,652 cu. yds. The bottom of the Ontario channel, above the upper apron was examined under water and found in good shape. A few hollows were filled with boulders, dropped from a scow, to level up the bottom and altogether the channel was in excellent condition, to resist the action of the water. The average number of men employed this month was 120. For the month Timiskaming lake level did not change appreciably, being 577·3 to 577·9 above and 570·2 to 570·9 below. The average temperatures were 48·5° F. day and 39·8 at night, and the water temperature 52·43° F.

The total rainfall was 3·22 in.

November.

In the first week, several rounds of timber were added to the anchor cribs a id the 9th coffer-dam crib was placed.

Ten sluices in the Ontario channel were open this week.

The steam shovel had a serious breakdown and only 450 cu. yds. of material were removed. Some scattered plant, etc., was gathered up and parked.

The 10th and 11th cribs were placed in the coffer-dam the second week, this joined the new work to the old west section. This new work measured 260 ft. to date, taken along centre line of cribs. Sheeting was commenced on the upper face with 2 in. plank doubled. The excavation quantity was 1,820 cu. yds. this week. Lake Timiskaming rose perceptibly. From this time until the finish, all stone was secured at the quarry.

The third week, the crib gang were building up cribs to elevation 583·0, with continuous timbering. The steam shovel opened cut to sluices, removing some 1,000 cu. yd.

The lake was rising rapidly and some water entered shovel cut and a six inch pump was set up to control this. A new camp for seventy men was erected.

The next week, the coffer-dam sheeting was continued, with the aid of the diver and the continuous timber work extended. About 95 ft. of sheeting had been placed to date.

The steam shovel was moved ahead of the water, to higher ground. Stone was collected for the lower coffer-dam and this cribwork commenced. The pile driver was set up to be ready for work.

The last week of the month a track was laid, from the Ontario channel to the main coffer-dam. A trestle was built to carry the track, to the new east section. A gang of men were outfitted to go up the lake, to secure more timber below Opemican. The sheeting of the main coffer-dam and lower or counter dam work was pushed ahead. The lake increased this month from 578·0 to 581·4 above and 570·8 to 572·0 below. The average number of men employed this month was 120.



No. 17—Wooden flume to carry leakage across pit discharging over counterdam. As pocket dam in foreground was staunched the pond rose till it entered the flume.



No. 18—Cutting ice in front of pocket dam so earth could be deposited along the face to staunch leakage. Cribwork of main dam in background.

The average temperatures were 27·0° F. day and 22·5° F. night and the water temperature 41·5° F. The precipitation for month was 3·885 in., comprised of 2·235 in. rain and 16·5 in. snow.

December.

The dump car track was finished at the first of the month and filling in front of the coffer-dam, was placed all month. The lower coffer-dam cribwork and stone ballasting was continued and main dam filling finished, the first week in January. The main dam cribs then scoured at the centre section, under cribs Nos. 6 and 11. It was necessary to place five extra narrow cribs, in front of the main work. The main coffer-dam sheeting continued all month. Sand bags, pea and oat straw were placed at the toe of the sheeting.

The average number of men employed this month was 138.

Lake Timiskaming levels were 581·5 to 582·7 above and 572·0 to 572·3 below. The average temperatures were 24·1° F. day and 22·3° F. night, and the water temperature 35° F.

The rainfall was ·21 in. and the snowfall 21 in., making a total precipitation of 2·31 in.

January 1912.

The rock filling in main dam was finished first week and counterdam ballasting and building continued. Rock was now quarried, to be crushed for concrete. On the 16th, the shovel finished the earth filling, in front of the main dam and was moved to Quebec channel.

On the 10th, two centrifugal pumps were set up and were running on the 19th, but had no effect on the leakage.

An extra 8-in. pump and 6-in. pump were set up, but still had not the desired effect on the water. The lower coffer-dam was completed this month and a pocket dam built and finished on the 30th, teams were used to haul earth filling.

During the latter end of this month, much ice was removed from the foundation pit and excavation was commenced in both abutments. The pile driver was lowered into the Quebec abutment, but operations were not very successful. The average number of men employed this month was 156. The lake surface fell from 582·7 to 581·4 above and from 572·2 to 571·0 below, the lake being run off this month. The average temperatures were — ·5° F. day and —4·6° night and the water temperature 32·5° F. The snowfall for the month was 18 in. or 1·8 in. precipitation.

February.

During the first week, an improvement was made in controlling the leakage, with the pumps. It was not however, until the 15th, when the pocket dam was tight and the flume carrying off a large percentage of the leakage, that good results were obtained. Some concrete was laid in the Quebec abutment walls during this week, about 80 cu. yds. in all. The mean temperatures were 9·1° F.day and ·1° F. night.

The next week, stone was brought from the quarry to dam site, on C.P.R. flat cars and all the work suffered for lack of coal. Much inconvenience was experienced all winter, through delay of coal shipments. Ice and earth excavation was being pushed ahead as far as possible, by hand work. Drilling and blasting the foundation surface was started. The mean temperatures were 16·9° F. day and 13·6° F. night.

The steam shovel was lowered down the bank into the Quebec channel and started work on the 18th. More concrete was laid this third week, about 300 cu. yds. had been laid to the 24th. The first shovel cut was made and the material cast to north of upper apron foundation. The mean temperatures were ·16° F. day and 11·6° F. night.

In the last week of February, forms were erected for the first seventeen feet lift of both abutments. In all, 570 cu. yds of concrete were laid in abutments and platform at west side. Excavation material was hauled out in cars this week, to dump at the head of the island, about 520 cu. yds. were removed. In all, about 2,500 cu. yds. of ice were taken out, of the foundation pit, this proved very awkward handling.

Teams hauled sand, cement and stone across the ice bridge in front of the main coffer-dam. The sand pit below Gordon creek falls was opened and 300 cu. yds. were delivered at dam site. The 2nd anchor crib was commenced on shore.

The average number of men employed this month was 215.

Lake Timiskaming remained steady, the elevations were 581.3 above and 50·9 below, at first and end of month.

The average temperatures for the last week 57·1° F. day and 1·8° F. night and the water temperature 32·58° F.

The snowfall for the month was 13¾ in., making precipitation 1·34 in.

March.

At the end of the first week in March, the construction work began to assume noticeable proportions. The steam shovel removed 950 cu. yds. of difficult excavation. No. 1 pier forms were erected and filled with concrete to half height.

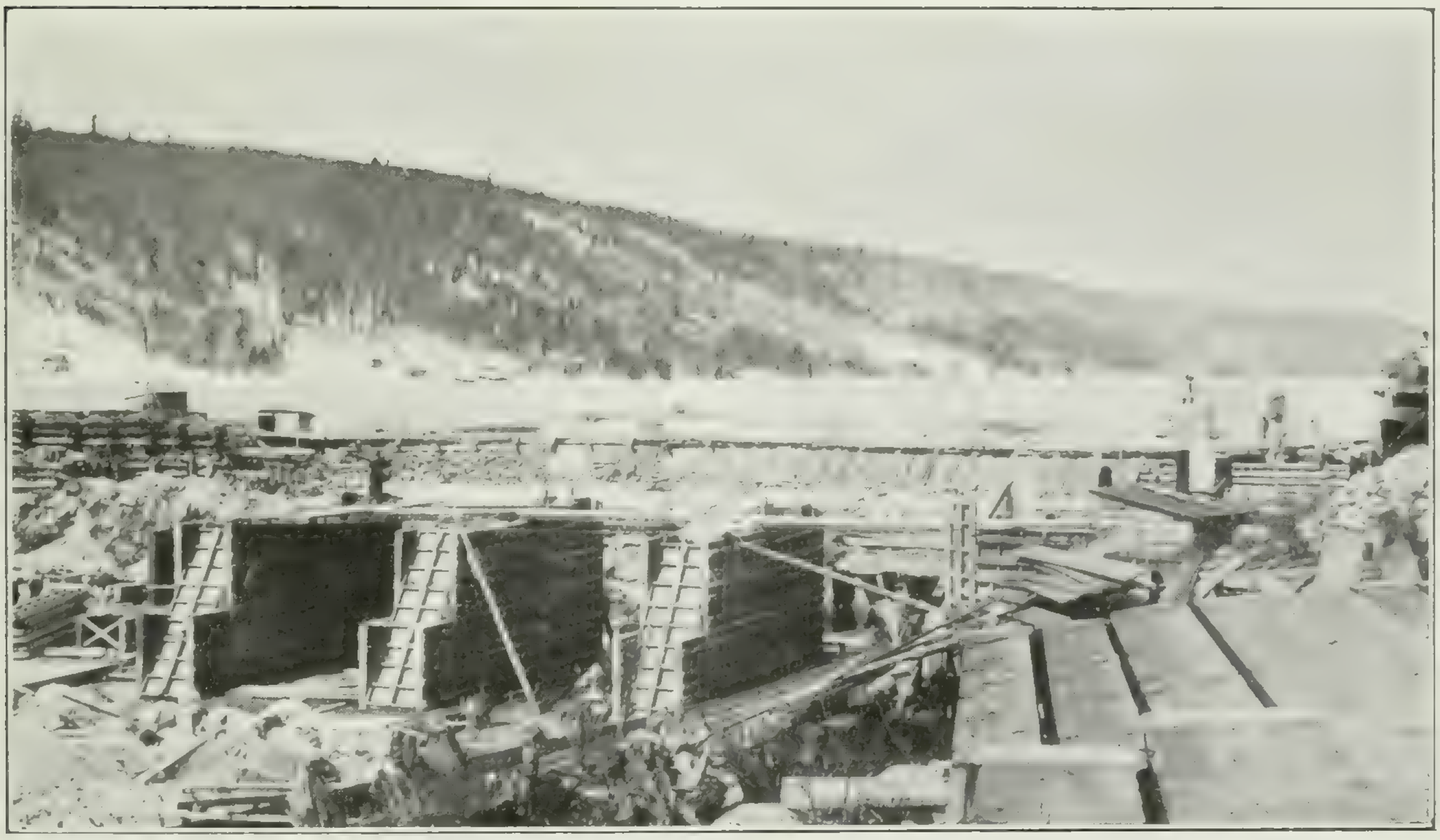
The island abutment concrete was also built to this elevation 583·0. The east abutment forms were added to and more of the platform concrete placed. in 3rd sluice bottom. At the end of the week, 486 cu. yds. additional of concrete had been laid. The rock crusher was operated and crushed about 115 cu. yds. towards end of week. The sand delivered was 500 cu. yds., making 900 cu. yds. delivered to date. Ice was still troublesome in the pit and the cold felt severely.

Mean temperatures were 8·2° F. day and 3·8° F. night.

The next week the steam shovel began 3rd cut, removing some 1,045 cu. yds. Forms were erected for 2nd and 3rd piers and piers 10 and 11 forms started. Low wall forms were also erected, along the line of the cut off trench, to leave this open for excavating. Troughs were built to confine the leakage and lead the water, through the finished portions of the platform. Three mixers were working this week and concrete quantity was 596 cu. yds., laid principally in the platform and Quebec abutment. To date 2,000 cu. yds. of stone was delivered from the quarry and the crusher working night and day, was delivering from 125 cu. yds. to 150 cu. yds. of crushed stone per 24 hours. A great deal of care had to be taken at this time, to keep the channel from Gordon creek open, to the pool below the island. In the pocket dam, a few leaks developed, evidently owing to the ice pressure. The quarry stone was taken to fill anchor cribs, scows being towed by an Alligator. A waggon bridge was built across the main coffer-dam and trestle, to keep up communication, when the ice bridge should be unsafe. The sand delivered to date was 1,650 cu. yds. To house more men, a large tent camp was erected for 50 men. This had a board floor, also inside framing, and proved a very comfortable and convenient camp, when heated. Mean temperatures were 17·4° F. day and 12·3° F. night.



No. 19—Cars being loaded with stone from the quarry. This rock was crushed for concrete.



No. 20—Forms for three piers up to half height.

The steam shovel finished all the excavation it seemed advisable to attempt and on the 20th of March was moved to upper side of foundation pit. For this 3rd week, 365 cu. yds. of excavation were removed. In the platform and 3rd and 11th piers, concrete amounting to 665 cu. yds. were placed and the lower forms for piers 9 and 8 set up.

Another trough was built at west side, to lead leakage through platform concrete. About 500 cu. yds. of rubble were placed in anchor cribs this week. The crusher worked night and day to keep up the crushed stone supply. Quarry stone was also used to fill the upper single boom anchor cribs, which were placed by the boom company. Twenty cars of cement arrived, were unloaded and stored this week. Mean temperatures were 27·7° F. day and 21·4° F. night.

During the 4th week, the heavy tackle was rigged again and the steam shovel hauled up the 17% grade and moved half way to the Ontario channel sluices. Concrete was deposited to half height, in piers No. 9 and No. 10 and to one-third height in pier No. 8. Seventy-five feet of cut off trench was excavated and filled with concrete, the total concrete quantity this week being 801 cu. yds. The crusher worked night and day to keep up supply and a few scows of stone were delivered by scow from ferry. Considerable difficulty was encountered in unwatering the cut off trench, there being too much leakage for syphons and not sufficient for a four-inch pump. The following week an Emerson pump was of much service here. The average number of men employed this month was 271.

Lake Timiskaming fell from 581·3 to 580·25 above and 570·95 to 570·3 below, and the water temperature was 33·16° F. The snowfall for month was 5¾ in. and the mean temperatures were 26·1° F. day and 21.9° F. night.

April.

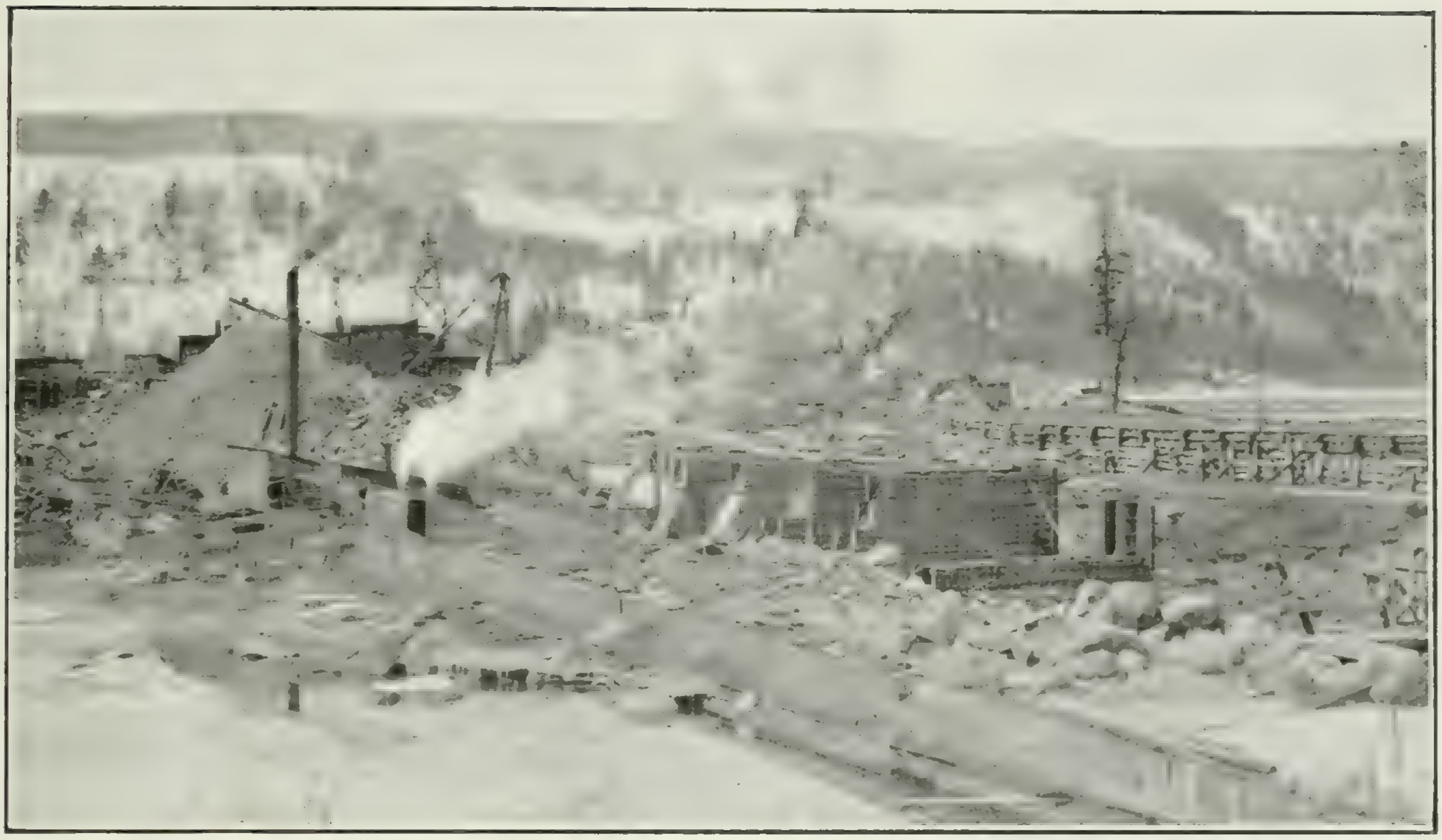
The steam shovel was moved to Ontario sluices east abutment and track layed across the sluices. All excavation plant, including hoist, boiler and track materials were brought forward. In the trench work, 65 ft. was taken out and filled, then sand was encountered in the west portion and sewer sheeting necessary. A few places inaccessible to the steam shovel, were excavated by hand this week. The carpenters were busy at forms for piers 7, 8, 9, 10 and 11, to full height (elev. 594·0). Some drilling and blasting was done on the lower apron site, to secure stone filling along at the edge of the apron.

Concrete to finish Nos. 5, 6, 7 and 8 piers was placed, this completed all piers to elev. 583·0. This proved the best week during construction, 1,170 cu. yds. of concrete being mixed and deposited. A gang of labourers cleaned up most of the tools, plant and lumber in the foundation pit.

The second week, the steam shovel was taken across the Ontario sluices and the dump track laid on the trestle, which was built last fall. The last section of trenching was to hand now and proved the most difficult encountered.

All of this was in quick sand, with a few underlying boulders and required sewer sheeting. Concrete walls at foot of boulder protection slopes at abutments, were built and piers 10 and 11. filled to top height. The concrete quantity was 390 cu. yds. The carpenter squad were busy taking off lower half of forms and erecting to full height, piers 4 to 9, which with part of number 3, were finished this week. The crusher worked only in day time. The boulder slope at island abutment was built up with stone, from main coffer-dam.

In the next week, some concrete was placed in the platform in different spots, to complete this and top half of piers 9, 8, 4 and 5. In all, 488 cu. yds. of concrete were placed. The steam shovel moved into place on the 17th and started first cut, in west side of Ontario channel, on the 19th. The top of west section of main coffer-dam was further lightened of stone. The filling at edge of lower apron continued with heavy rock and hand picked stone on top



No. 21—General view of pit, end of March, 1912. Note how water below counterdam has fallen due to clearing of anchor ice from river. During February the water threatened to overtop this and prevent further work.



No. 22—H.B.C. post now abandoned at the Narrows, Timiskaming reservoir, fifty miles north of the dam.

The trench to pump well was also filled with large boulders, to prevent scouring here. A gang still continued cleaning up top of platform of all machinery, plant and lumber, which were moved to stores and higher ground.

The last week in April, practically finished work below water. The island abutment and piers 1, 2 and 3 were finished, except the rear end of abutment walls, 260 cu. yds. of concrete being placed this week. Forms were taken off all the piers as soon as possible, to allow placing of stop logs. The pumps were removed on the 22nd and the back water allowed to fill in. All coffer-dams were lightened of stone and preparations made for demolishing.

About 13 ft. of stop-logs were placed in the sluices and the counter and pocket dams blown out. All plant not in use was taken down and stored on the embankment. The anchor cribs were complete and the stiff booms, which were under construction for a few weeks, were finished. All boulder protection slopes were built above probable water elevation, when the main coffer-dam should be opened. On the 28th the main coffer-dam was opened, for about 50 ft. in the centre.

The average number of men employed this month was 232.

Lake Timiskaming rose rapidly from 580·1 to 584·1 above and 570·2 to 574·6 below. The average temperatures for the month were 38·3° F. day and 33·2° F. night and the water temperature 35·86° F. It is interesting to note here, that last year the water temperature was 35·97° F. The precipitation was 1·974 in., made up of 7¼ in. snow and 1·249 rain.

May.

In the beginning of the month, the steam shovel finished the 1st cut, in the Ontario channel and moved back for the second. The concrete mixers were all taken out and the small remaining concrete mixed by hand. The main dam was all blown out, except about 50 ft. on each side, which can better be removed at low water stage. The abutment earth filling took most of the labour all month. All concrete work was plastered and washed with grout. The stiff booms were placed leading to the log pass and give entire satisfaction. All plant was overhauled, cleaned and otherwise put in good order. Lake Timiskaming reached an elevation of 586,6, which will probably be the maximum for the year. Steel I beams were placed to carry log lifter machine track and a 3 in. red pine deck laid, on the 6 x 12 in. B.C. fir stringers.

I have the honour to be,
Sir,
Your obedient servant,

H. H. DONNELLY,
Asst. Engineer

Timiskaming, Que., July, 1912.

The engineers under Mr. Donnelly were Alex. A. Anderson, W. E. Blue and A. J. McCool all of whom were on the work before the men every morning and often late at night.

A detailed statement of the expenditure kept by Mr. Clapperton and tabulated by Mr. A. P. O'Meara follows:—

Timiskaming Expenditures, 1911.

SUMMARY.

August, 1911, to March 31, 1912.

Groceries	$ 5,856 64
Meats	3,829 06
Cookery outfit	309 76
Laundry outfit	27 25
Camps	1,956 12
Stables	274 78
Explosives	5,177 19
For concrete work, boots, tarpaulins, etc	734 60
Smith mixer	1,175 00
Saw mill	599 70
Lighting plant	463 34
Hoisting engine	1,102 00
Pile driver	499 90
Diving outfit	710 25
Lights	329 80
Pipe	285 35
Oils, lead, etc	441 75
Lime, zinc, oakum, etc	119 94
Straw	200 19
Pumps	2,708 10
I beams, channels, etc	65 10
Hose	259 21
Belting	326 83
Valves	70 53
Cable	829 62
Rails	828 96
Boiler parts	111 75
Fittings	248 53
Iron, (round) $180.42; (flat) $25.61; (sheet) $24.15	220 18
Steel, (round) $167.99; (square) $15; oct. $91,86; D. Rock $14,20, mild $97.01; plate $8.61	394 67
Spikes $630.22; nails $156.80; bolts $21.39	808 41
Rope $88.83· chain $60.46	149 29
Oilers	14 98
Blocks	162 78
Waste	56 28
Packing	48 50
Jute bags	429 50
Jacks	122 10
Tools	696 80
Miscellaneous tools and fittings	649 67
Sand	1,006 20
Wood	640 32
Wment	5,281 43
Blacksmith coal	81 46
Steam coal	1,658 07

Lumber and timber	$ 5,297 83
Rent of scows, steamers, etc	1,821 50
Team work	363 22
Inspection Kirby & Stewart plant	271 55
Haileybury waterworks	1,678 16
Liskeard	799 49
Claim	70 00
Travel and disbursements	667 04
Telegraph	176 92
Commission	244 20
Board of staff	1,141 50
Freight	1,588 02
Express	533 02
Canvas, etc	32 05
Labour	78 25
Total	$ 56,724 64

Kipawa River Dam.

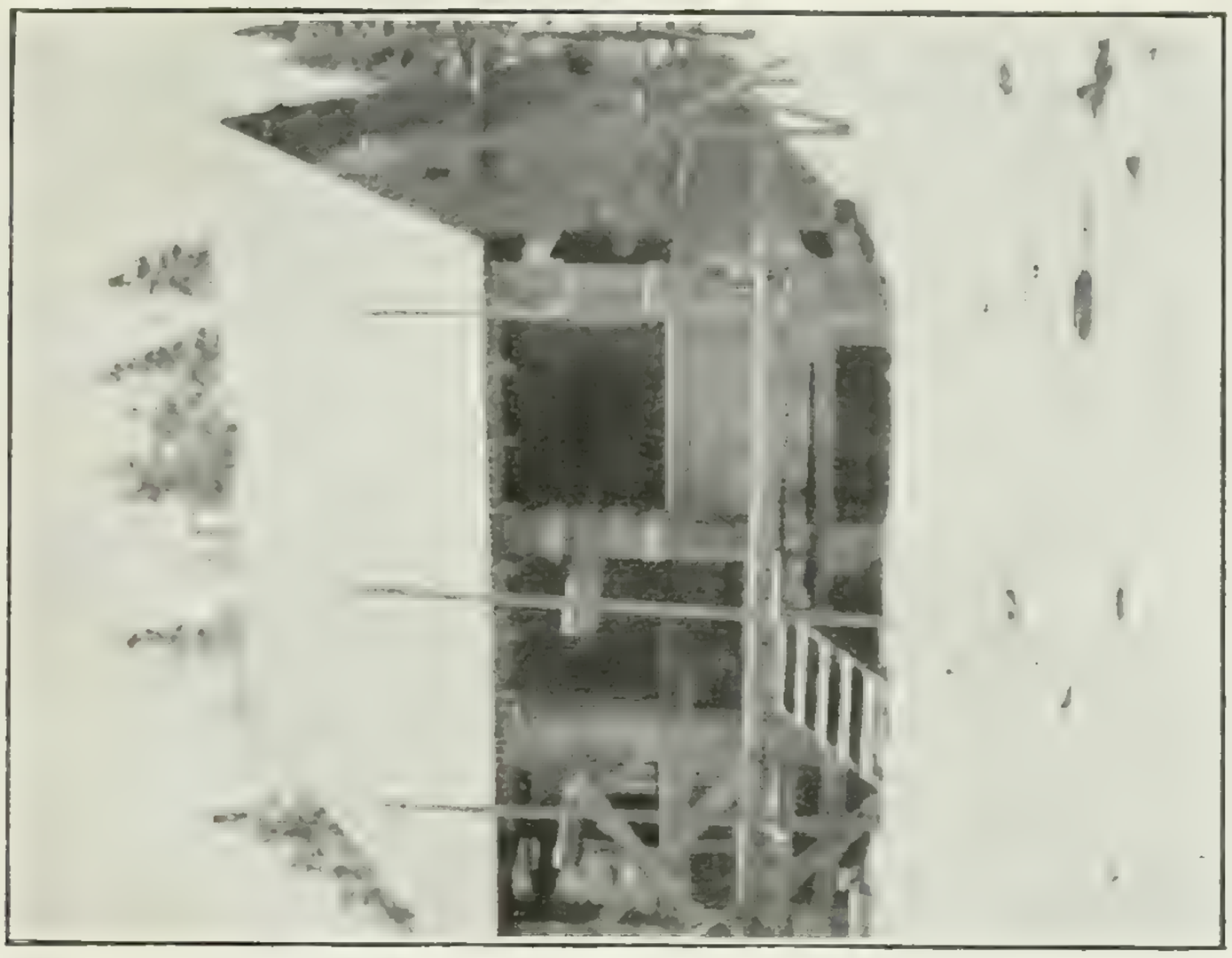
The dam at the north end of Kipawa lake across the outlet of Kipawa river was finished in 1910 and the stop log lifter was erected by the beginning of April, 1911. The slow working of this machine was unsatisfactory, so Mr. Haycock was employed to make a study of the force required to lift out logs at different depths and to arrange such improvements as would be desirable. For this purpose a Fairbanks suspension scale was taken to the dam during August, 1911, and tests made.

Two scales could not be obtained in time, so one end of each stoplog was raised by the machine speed while tackle was attached to the other end. Firstly the stoplogs were removed from the sluiceway one at a time, and the initial pull recorded for each. Secondly one 18 inch log was forced down to the bottom of the sluiceway then raised and the pull recorded at intervals. (See table.) Thirdly two 18 inch logs battened together were forced down to the sill and the pull recorded at intervals in lifting.

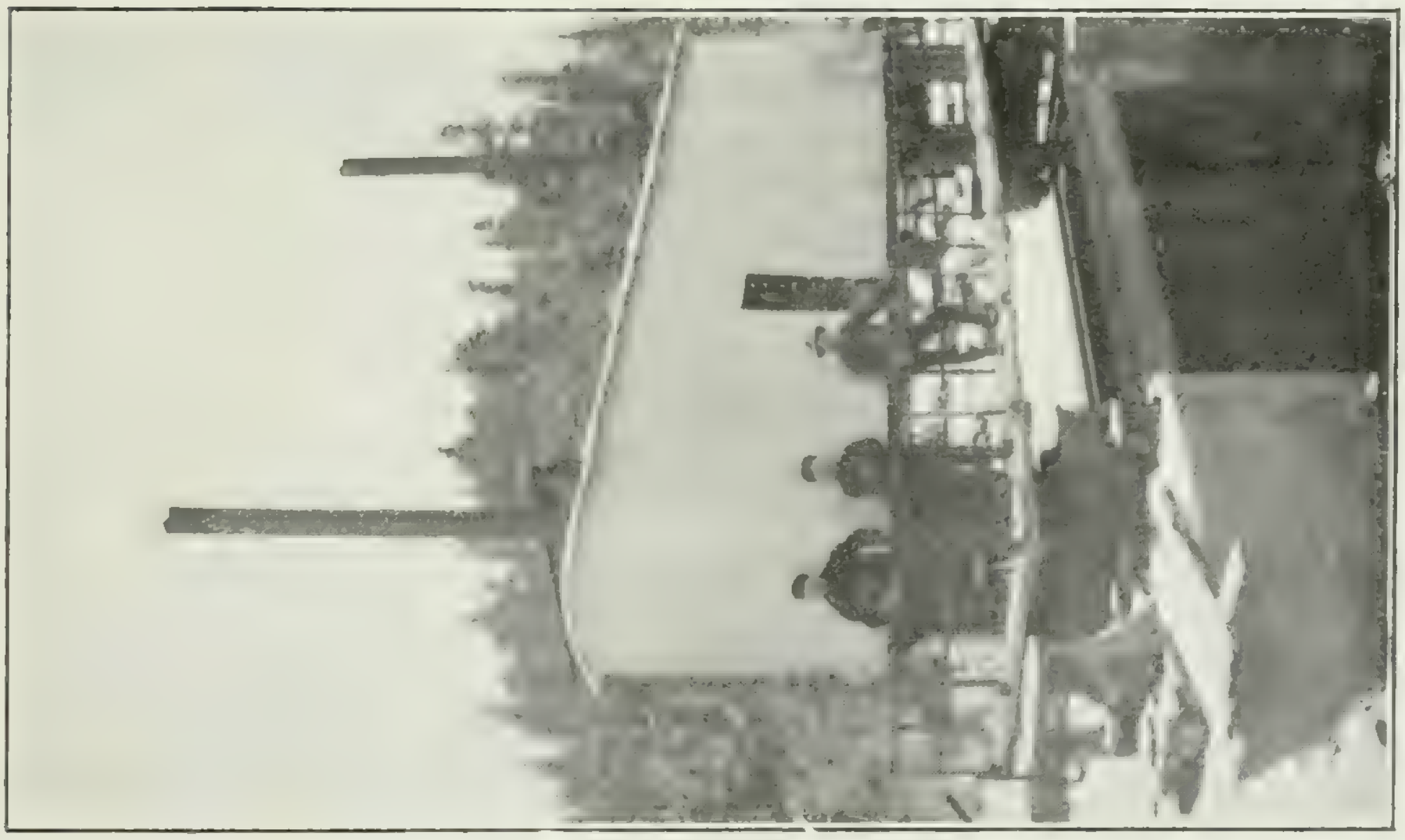
Some minor alterations were made to the lifting hooks of the log lifter and the machine was housed in with corrugated sheet iron on a structural steel frame. Bracket arms were also attached to the machine by means of which the logs may be moved sideways and piled upon the deck. See Mr Haycock's report page 45.

In September, 1911, construction began upon a residence for the dam tenders and by the end of December the concrete foundation was finished and the framework completed. It yet remains to build the concrete walls and to cover the roof with sheet iron.

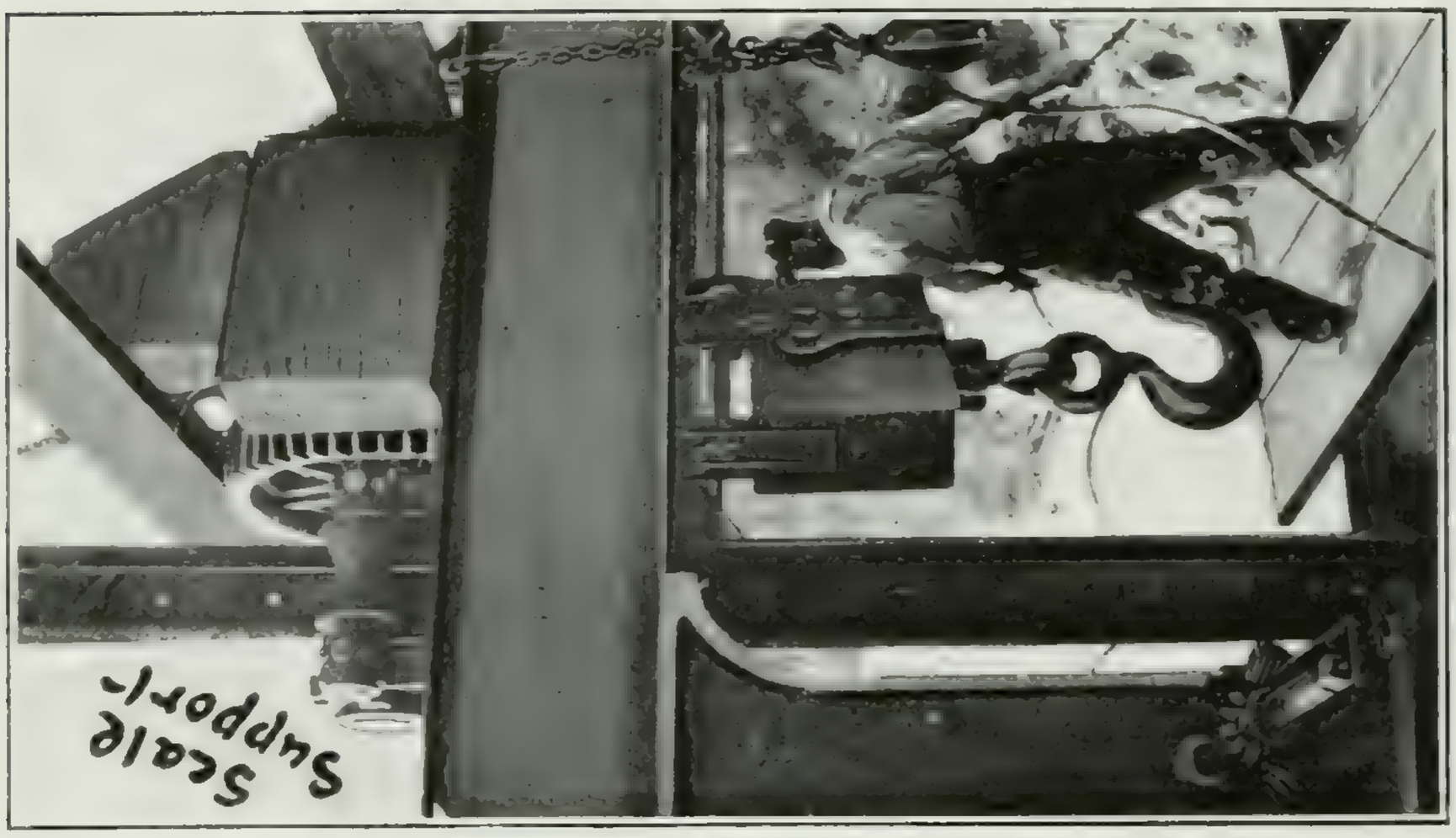
The house exterior is designed to resist the sweep of a bush fire, a risk which is ever present during the summer months. To this end the walls are concrete, the roof and eaves are covered with the sheet iron and the windows are protected with sheet iron shutters.



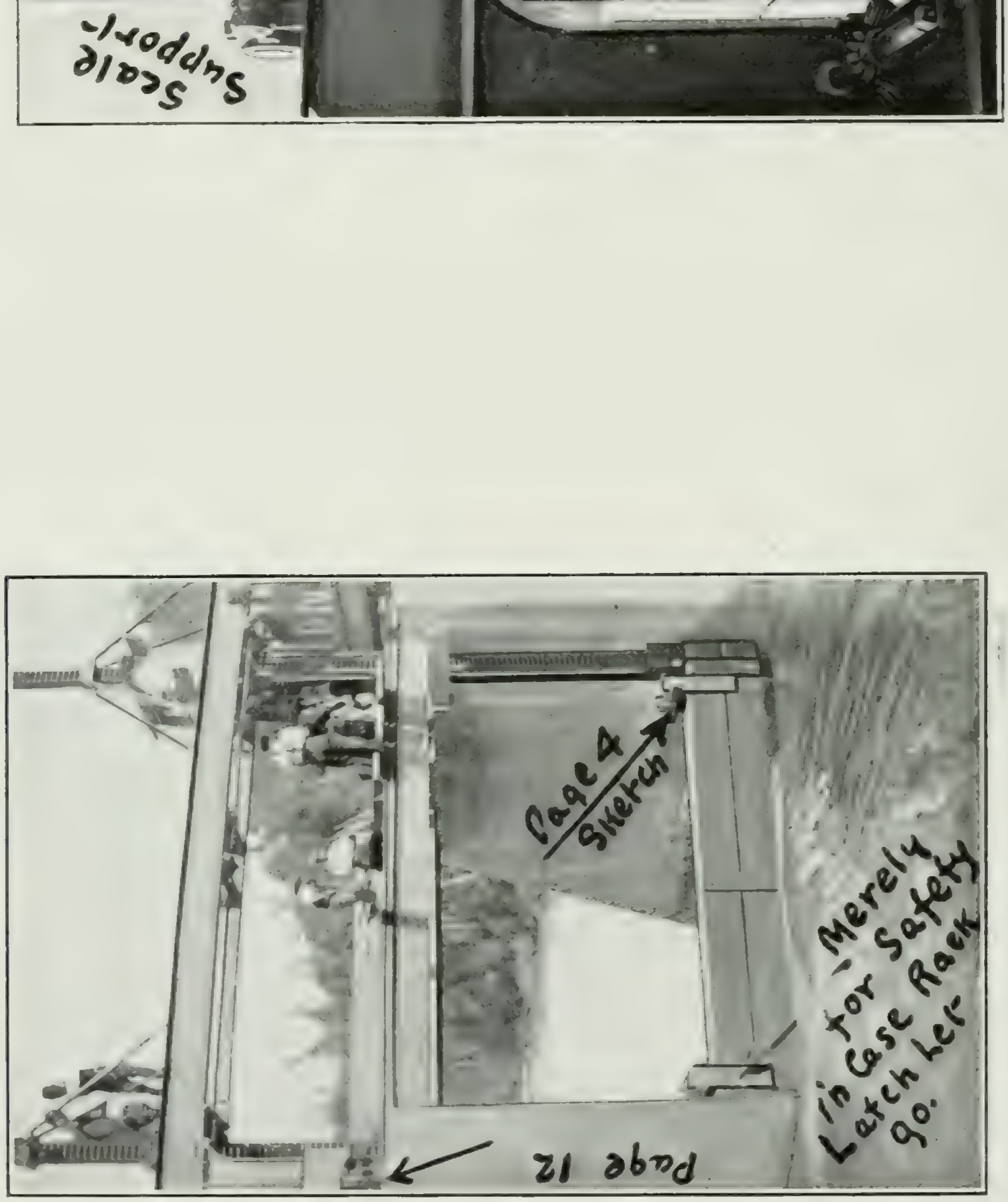
No. 23—Kipawa reservoir. House for dam tender at Kipawa river built of concrete with metal roof and window shutters to resist destruction by forest fires



No. 24—Kipawa reservoir. Log lifter with housing of corrugated metal. The verticals are forty feet long.



No. 26—Log lifter, Kipawa river dam showing Fairbanks suspension scale and hook in position for power tests.



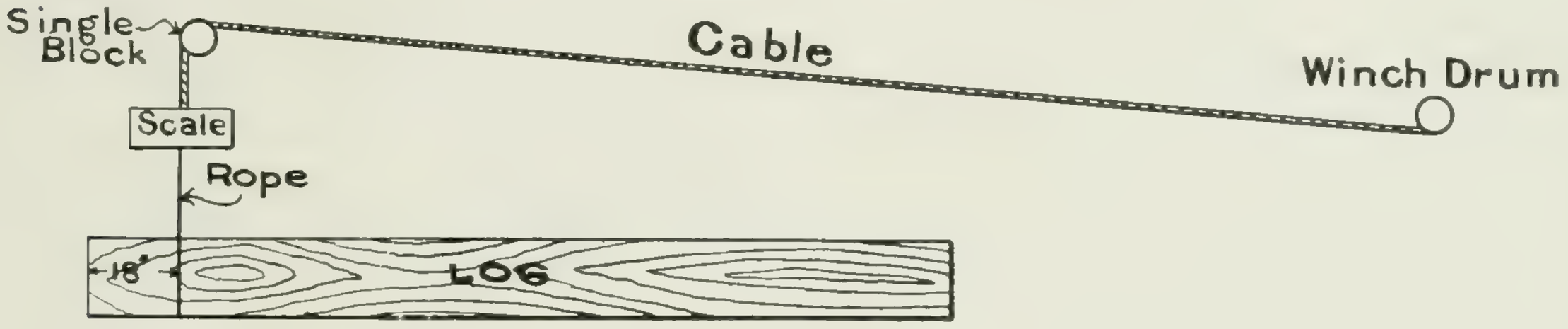
No. 27—Log lifter Kipawa river dam. The verticals are attached to and lifting two eighteen inch square B.C. stop logs, which are battened together.

C. R. COUTLEE, Esq., engineer in charge.

Sir:—In accordance with instructions I proceeded to Kipawa Dam to inspect the log lifter and obtain information of power required to lift the logs.

We first removed the top log which was above water. This took 15 minutes for a raise of 12·1 feet, or 1·23 minutes per foot travel of log.

Then we began work on the machine and rigged our apparatus as shown in sketch No. 1.

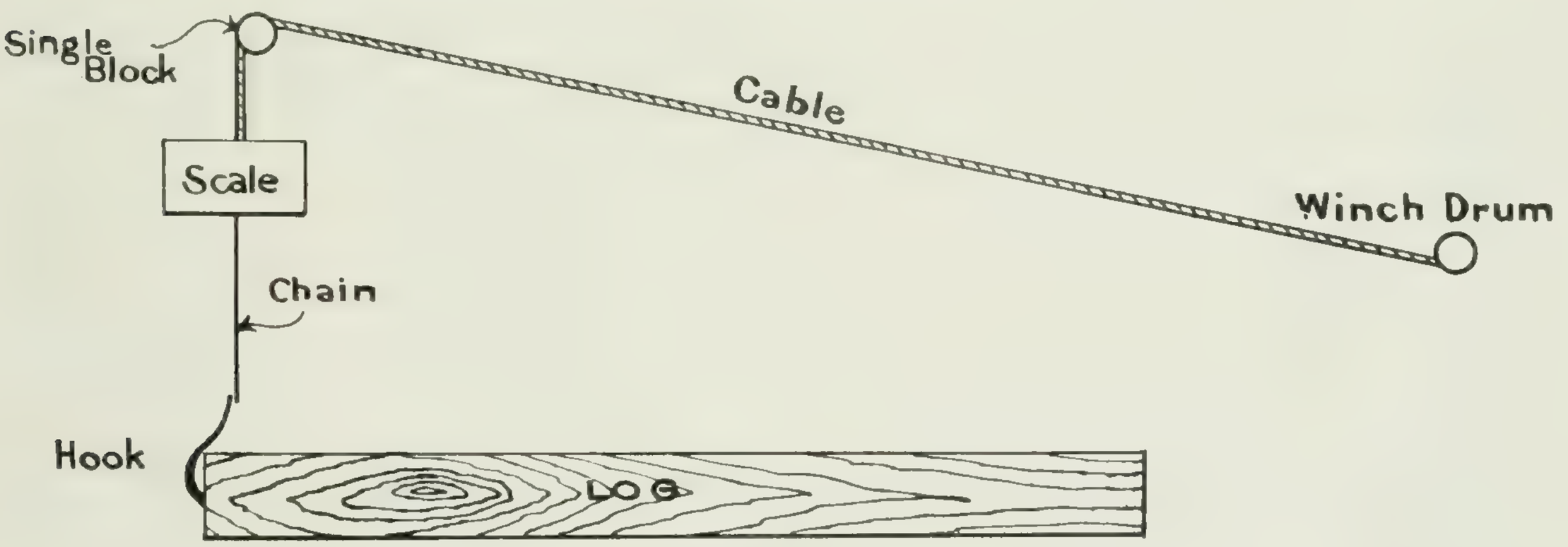


Sketch No. 1

The lake level was just flush with the top of this log. The moving pull was 2,100 pounds and was practically constant for about 2 inches travel. In all cases the figures will be for the total pull for both ends of the logs. The total travel was 13·6 feet and time absorbed 16 minutes or 1·18 minutes per foot.

Before beginning work after noon I had all grease cups filled and the machine well oiled and there was a marked difference in the working of the machine.

The next log (2nd from surface of water) had a head over it of 1·5 feet taken from the lake level not the crest and this applies to all logs. The moving pull was 4,800 pounds and was practically constant for about ½ inches travel. The attachments were as shown in sketch No. 2.



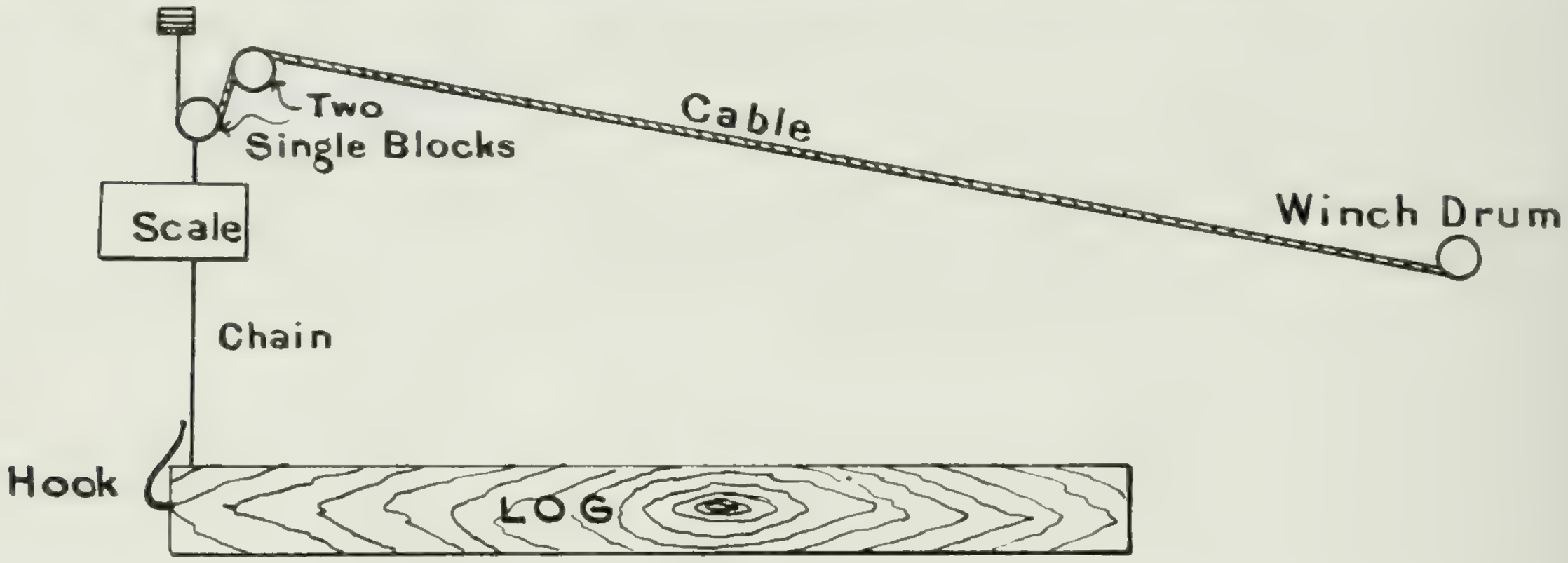
Sketch No. 2

The travel was 15·1 feet and the time 25 minutes, or 1·65 minutes per foot.

The next log (3rd from surface of water) had a head over it of 3 feet taken from the lake level. The moving pull was 6,000 pounds and was practically constant for 2 inches of travel. The attachments were the same for this as for the 2nd log. The total travel was 16·6 6 feet and time 25 minutes, or 1·5 minute per foot.

The next log (4th from the surface of water) had a head over the top of it of 4·5 feet. The moving pull was 7,200 pounds and was practically constant for about 2 inches travel. The attachments were the same as the previous log. The travel was 18·1 feet and the time 30 minutes, or 1·67 minutes per foot.

The next log (5th from surface of water) had a head over the top of it of 6 feet. The moving pull was 8,000 pounds and was practically constant for about 2 inches. The attachments were the same as the previous one except that the cable suspending scales was arranged for double purchase.



Sketch No. 3

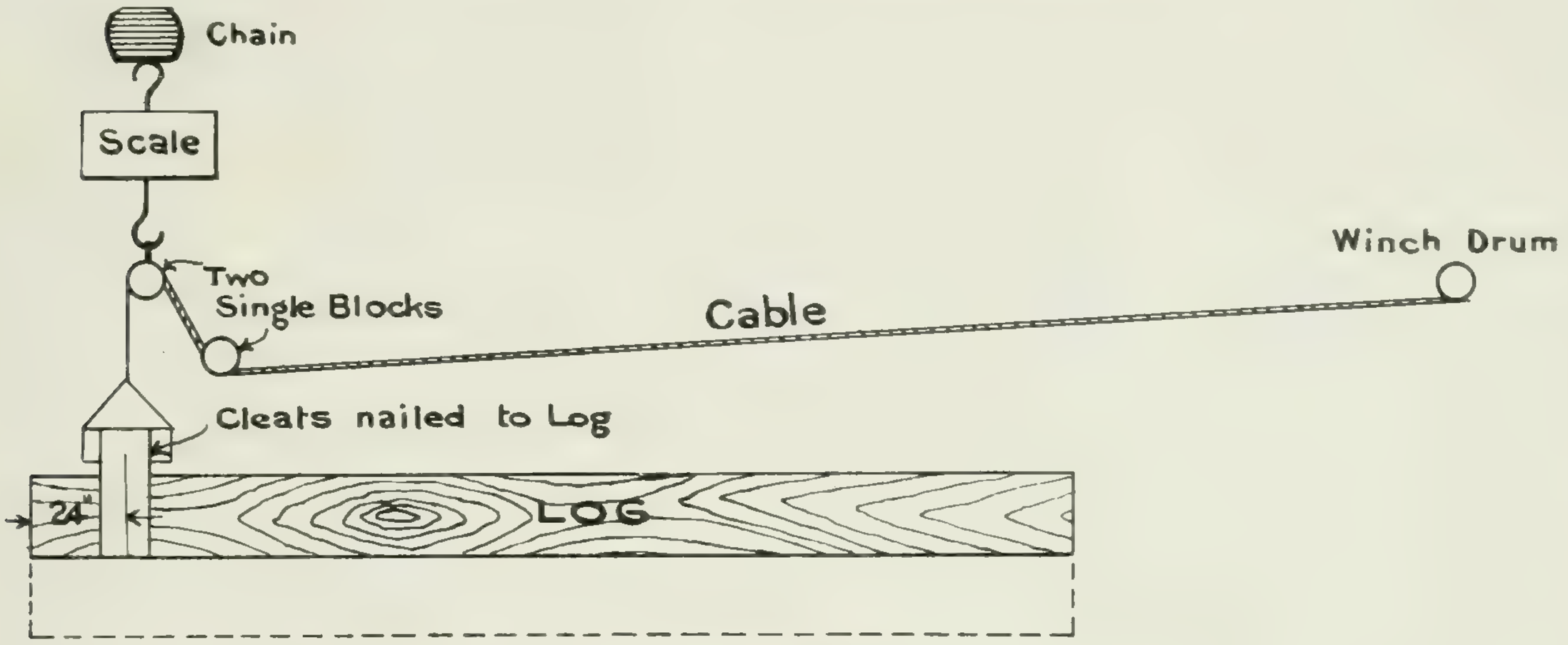
The travel was 19·6 feet and the time 35 minutes, or 1·8 minute per foot. With this head of water it was difficult hooking on to the end of the log. When the log was raised up by the machine it was found that the hook was barely caught and that a very slight tap on the hook was sufficient to disengage it.

The next log (6th from surface of water) had a head over the top of it of 7·5 feet. The moving pull was 4,600 pounds and was practically constant for about 3 inches travel. The attachments were the same as the previous one. The travel was 21·1 feet and the time 38 minutes, or 1·8 minute per foot. It was surmised that this smaller pull obtained when greater was expected was due to the log not being down properly in place, but when the log was shoved back to position and pulled again, the pull was found to be the same.

The next log (7th from the surface of water) had a head over it of 9 feet. The moving strain was 4,800 pounds and was practically constant for about 2 inches travel. The travel was 22·6 feet and time 50 minutes, or 2·21 minutes per foot. When this log was shoved down to place it was very difficult to make the rack hooks engage with the end of the log and vice versa when the log was to be lifted by the machine much time was lost making clips engage.

The next logs (two battened together, 8th and 9th from surface of water) had a head of 10·5 feet. The moving pull was about 7,200 pounds and increased to 7,600 pounds with about 4½ inches travel. The attachment was the same as the previous log. There was much difficulty disengaging the hooks from the ends of the log, in fact the better part of an afternoon was lost. Should the logs be slightly out of the horizontal position the hooks of the racks disengage very easily. When properly fastened to the rack clips, these logs came up with very little more power than with a single log. Travel was 24·1 feet in 70 minutes, or 2·9 minutes per foot.

The next log (10th from the surface of water, being the bottom log) was raised above the surface of the water and attachment made as shown.



Sketch No. 4

When the racks were lowered, much trouble was experienced in making the clips engage with the ends of the log. After many attempts the racks were raised for examination and in one were found a number of small stones, about 2 to 2½ inches in size, which interfered with the motion of the latch. After making attachment as shown in sketch No. 4, the log was pushed down to position and after many trials, the latches were disengaged. The probable cause of this trouble to engage and disengage the clips from this log is that the pressure caused by the flow of water against the rack causes the clips to bear against the rail and thus makes the operation of the clips more difficult. I would suggest the opening between the clips be planed off from 2½ inches to 3½ inches This will ensure the clips being clear of the guide rail and will facilitate the operation of the same.

The readings of this log were taken at intervals all the way from the bottom to a position where the log was clear of the water. Both ends of the log were raised together, one end by the machine and the other end by the cable passing over the pulleys as shown.

Pull in pounds raising one 18 inch stoplog from sill of sluice to water surface.

Distance Top of log to top of sluice bridge.	Total pull on log. (Both ends.)	Remarks.
25·5 feet	3,800 pounds.	Log on sill, bottom of sluice.
24·5 "	3,300 "	
23·5 "	2,800 "	
22·5 "	3,300 "	
21·5 "	3,700 "	
21·0 "	4,500 "	
20·5 "	4,100 to 4,700 "	
19·5 "	5,100 "	
19·0 "	6,000 "	
18·5 "	6,600 "	
17·5 "	6,000 "	
17·0 "	4,100 "	
16·5 "	3,500 "	Log just touching sloping surface of water.

NOTE.—Distance from top of concrete to sill—27 feet which makes distance from top of one log on sill to top of concrete—25·5 feet.

Attachment was made to the double log and method of operation was the same as for the single log. This double log was lowered to position on the sill and many readings taken at intervals while the log was being raised.

Pull in pounds raising two 18 inch stoplogs connected together from sill of sluice to water surface.

Distance Top of Log to Top of sluice bridge.	Total pull on Log. (Both ends.)	Remarks.
24·0 feet	4,200 pounds	Log on sill, bottom of sluice.
23·0 "	8,800 "	
22·6 "	9,700 "	
22·4 "	11,500 "	
22·0 "	10,000 "	
21·6 "	8,200 "	
21·0 "	7,100	
20·0 "	7,000 "	
19·2 "	7,000 "	
19·0 "	6,000 "	
18·6 "	6,000 "	
18·2 "	5,700 "	
18·0 "	5,800 "	
17·6 "	6,100 "	
17·3 "	6,900 "	
17·0 "	7,000 "	
16·9 "	7,300 "	
16·8 "	9,800 "	
16·6 "	10,000 "	
16·5 "	11,500 "	
16·3 "	10,900 "	The increase in power and the falling off again is probably due to the velocity of flow. That is, when a certain relation exists between the volume passed below and above the logs.
16·2 "	11,000 "	
16·0 "	11,500 "	
15·6 "	11,800 "	
15·4 "	12,000 "	
15·0 "	12,800 "	
14·8 "	12,700 "	
14·6 "	11,800 "	
14·3 "	11,000 "	
14·0 "	11,100 "	
13·7 "	11,200 "	
13·3 "	11,000 "	
12·4 "	7,000 "	
12,0 "	6,000 "	Water level with tops of logs at centre and clear of bottom at both ends.
11·0 "	6,500 "	

The machine according to the builders, "will require two men to operate." This statement is not correct as it is found necessary to have two men on each of three cranks to raise the logs whether in or out of the water.

The meaning I apply to the word *operate* is for *continuous operation*. A couple of men can move the racks up and down with one or two logs on them, but they could not keep this work up for more than two or three minutes and then they would require a rest of five or ten minutes. This is by no means the meaning of the word operate. With six men it is found that the limit of endurance seems to be reached in fifteen or twenty minutes.

For the end travel, or the side movement, even with three cranks and two or three men on each crank, pinch bars have to be used to move the machine.

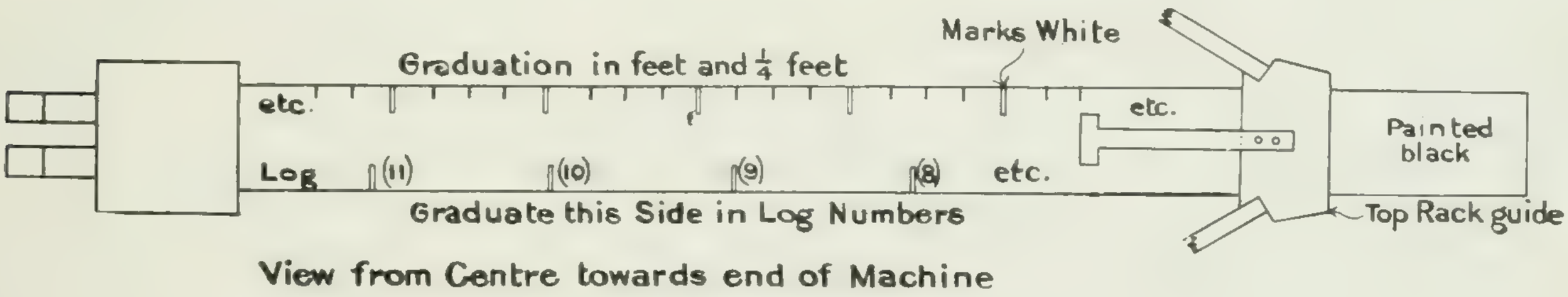
With a knowledge of the foregoing it is very evident that power of some description will have to be applied to the machine. We have a choice of steam, electricity or gasolene.

Steam has many advantages when the location of the machine is taken into account. At some periods of the year when the machine is operated, the logs are liable to be frozen in place and if it should happen that the machine should be operated after a heavy sleet storm, the steam would be very convenient for thawing out the gears. Then further steam has a great advantage over the other two owing to the flexibility of the speed and power. A licensed engineer would be required for operation.

Electric power would entail the installation of a small power plant at the dam, as the nearest point where electric power is generated, is Lumsden's Mills, about 30 miles away. It would also be necessary to install a small boiler for thawing purposes. An electrician would be required for successful operation.

Gasolene power could readily be used. It is not so flexible as steam or electricity, but it has the advantage that a licensed engineer is not required for its operation. A man capable of operating a gasolene engine, such as your Mr. Dalglish, could take care of the engine and operate the machine. A small steam boiler for thawing purposes would be required.

This power should be applied to the machine at the centre where the main shaft is coupled and should not be less than 20 horse power at 300 revolutions per minute. This main shaft is capable of handling this amount of power. When the power is applied at this point, it should be provided with slip gears on the main shaft to enable the operation of either end of the machine separately or both ends simultaneously. All brake operation and gear change for raising or lowering of racks or travel of the machine could be brought to the operator's position at the centre of the machine above the main beams. The change of the machine from endwise to sidewise movement would have to be done by hand, but when changed could be thrown in gear with the power, or main shaft. From the operator's position above the main beams, he would be able to watch closely the working of the machine. The rack legs should be carefully graduated and have an indicating pointer in view of the operator at all times. Suggestion in sketch No. 5.



Sketch No. 5.

The main shaft turns about 30 revolutions per minute when the men are raising the logs. This could easily be increased to 250 or 300 revolutions as a maximum when the machine is operated by power. It is found that 44 revolutions of the main shaft will raise the racks one foot, or if turning 300 revolutions per minute the racks would raise 6·8 feet per minute. The Ottawa machine operates practically four times as fast as this.

The whole machine should be housed in with a framework of light angles covered with corrugated sheet iron. This covering should be arranged to give head room to the operator when standing on the floor above the main girders and should extend down to the top of these girders. Suitable windows should be placed to facilitate views of the different operations. All gears exposed to view in this housing should be carefully covered with guards of sheet iron to protect men working about the machine.

Proper operating platforms securely bolted to the machine with suitable pipe railing should be provided for immediate operation of machine in present condition. The staging used for operating the machine during our investigations was very dangerous.

Hatches should be provided, in suitable size for easy handling, to fit in between the rails, and these should always be in place in the pass over which the machine is not operating.

The holding down hooks which were both broken, were much too light for the power required. The screws to which these hooks were attached were both badly bent.

Owing to the use of a heavy grease on all bearings, the machine will probably work much stiffer in cold weather.

Some of the bearings are much too tight. I would recommend that tin liners be put in all bearings, and the caps bolted down tight on these liners, and the lock nuts carefully tightened up.

The hook attachment at the bottom of the racks gives sufficient travel for piling the stop logs only two high, with the latch attachment which is used on the Ottawa machine, the racks could be raised high enough to pile the logs three high.

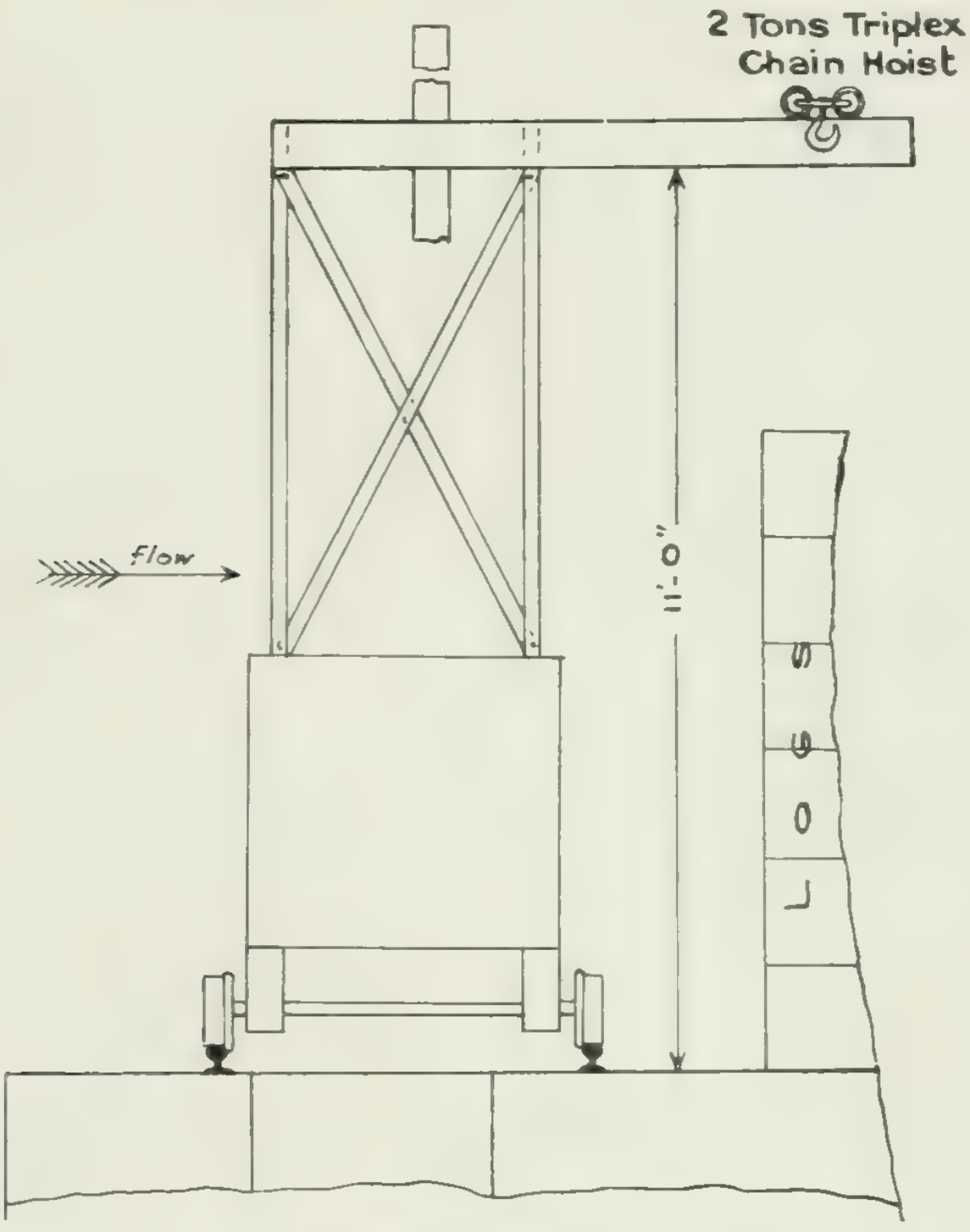
When the racks are raised so that the foot travels above the concrete, the hooks swing out so as to require guiding by hand, when the racks are lowered, otherwise the hooks strike the top of the concrete and prevent the lowering of the racks. Also when this takes place the release rod is badly bent.

As stated above, I consider the present form of latch, or hook mechanism, at the bottom of the racks a dangerous, inefficient arrangement. Dangerous because when lowering the double log the end became engaged on the top of the guide rail at one end and the hook became disengaged. The slightest jar or shake might have loosened this and the log would have dropped. It was necessary to put a rope sling under the log to prevent this taking place and then to lower the rack for the hook to re-engage. Inefficient because fully three-quarters of the time was wasted trying to make this latch take hold, or let go as wanted. I understand this happens very often when operating the machine.

A temporary relief for this trouble could be worked out by taking off these hooks and having the space between the two logs increased from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches.

I left, with Mr. Dalglish, a model in wood of the end of the guide rail showing how this can be bevelled off to eliminate the danger of having the log catch on the rail. This improvement could be made any time by a cut with a hack-saw and by bevelling the edges with a cold chisel.

To obviate the necessity of moving the machine sidewise to deposit the logs or to pick them up from the bridge, I would suggest the use of a couple of jib cranes, legs sufficiently braced as shown in sketch:—



Sketch No. 6.

These beams each to be equipped with a trolley and a Yale and Towne chain hoist of 2 ton capacity. With this outfit two men could handle the logs from the machine, on the same principle as the machine at Ottawa, and pile the logs five or six high. The machine equipped with this outfit could be operated easily by three men, one to operate the power and two to handle the logs. In the operating of the machine this manner of handling the logs would dispense with the trouble of moving the whole machine and the consequent trouble and waste of time getting it back to the same position. It also allows piling the logs higher than the machine can pile them.

I would suggest that the deck of the bridge over the sluiceway be covered with a concrete floor as a protection against fire. If the logs are piled very close when on the bridge or top of the concrete floor fire will do very little damage to them.

When this covering is in place, good hand railings of pipe should be placed round the edges of the whole dam as a protection for the men working about the machine.

It was noticed that when the machine was in position over the guide rail to handle the logs, the upstream wheels were within a couple of inches of the rail stops. These rail stops are practically at the edge of the concrete and preclude the possibility of shifting them far enough to enable the machine to be used to place a second set of logs in front of the first set should anything happen to a log in the first set.

The machine as a whole is well made and with the slight improvements suggested should give complete satisfaction when operating under the new conditions.

The manufacturers have evidently not considered the limit of man power and are trying to turn out a machine operated by hand when it should be operated by power.

I would especially recommend that the two following improvements be made as soon as possible:

1. The rack hooks should be improved. First as a temporary improvement they should be taken off the machine and shipped to Wm. Kennedy and Sons to have the space between the lugs changed from 2½ to 3½ inches. Then some other attachment should be studied. I would strongly recommend the same principle as on the Ottawa machine and all the other machines turned out by the builders of the Kipawa machine.

2. Power must be applied to the machine. I recommend steam as it will be required at certain seasons of the year to release the logs when frozen in place. Steam is more flexible—that is, it is under greater control and therefore will be easier on the machine and not so liable to strain the mechanism. This power should be applied to the main shaft at the centre of the machine. This shaft has a coupling, which is practically in the proper place to apply the power. The power should not be less than 20 horse power at 300 revolutions per minute and this main shaft is the proper size to handle this amount of power.

All brake and change of gear mechanism could easily be brought to the centre of the machine for the convenient handling by the operator.

R. L. HAYCOCK,

CAUCHON & HAYCOCK,

Consulting Engineers, Canada Life Building.

Ottawa, Ont., August 17, 1911.

Gordon Creek Dam.

Gordon creek dam is at the south end of Kipawa reservoir where the Canadian Pacific Railway, Kipawa branch, touches the lake shore. The scheme adopted was to form a rock fill around the entry to Gordon creek which would also carry the railway tracks to two new freight sheds. The old freight sheds, through which a large tonnage of hay, oats and lumbermen's supplies was transferred from car to boat each year, were two story buildings.

At low lake level in autumn the lower story was available for piling hay and oats, but with a maintained reservoir level, this would be flooded from May to January. The railway approaches to the sheds would also be rendered useless so sheds and tracks above reservoir level were necessary. To give floor space equal to that of the two story sheds, buildings twice the area were required.

Two sheds therefore 143 feet long and 35 feet wide were constructed upon cribwork piers and trestle work bents, the cribwork being along the water side to resist the bumping of boats.

To pass sawlogs, a canal 20 feet wide was cut through the rock point between Kipawa lake and Gordon creek and a concrete sluiceway, arranged for stop logs, was built at the entrance.

Steamboats now pass by the south channel to reach the sheds, while the saw logs are boomed off into the north channel. This arrangement obviates the former trouble of passing steamboats through the massed logs.

The work was placed under contract 20th September, 1911, Messrs. Morrow and Beatty beginning work in November by the construction of the foundation cribs for the warehouses. Rock excavation was begun in a borrow pit on the south side of the creek in December and the output used to make the rock fill dam across the head of Gordon creek. During January, 1912, rock work in the sluiceway was begun, which was also deposited in the dam.

Their plant was rather a new departure as the whole power was concentrated in one building where a steam engine and air compressor were set up. This furnished air to the machine drills in the sluiceway and it was also piped some 500 ft. across the creek to the borrow pit quarry. There was no difficulty from freezing although the winter was one of unusual severity and there was no condensed steam in the air.

At the quarry a large steel mast and steel boom derrick 40 ft. high and capable of lifting 10 tons at 65 feet radius was used. There was no injury from blasting and the steel frame members can be unbolted to suitable lengths for shipment on a single car.

All the crib and trestle work foundations for the warehouses were built and filled with stone by the end of March, 1912, and also the railway bridging alongside the sheds. The rock fill dam was practically completed, the cofferdam at the entry of the sluiceway was built, made tight and nearly all the rock excavation was done by 1st April.

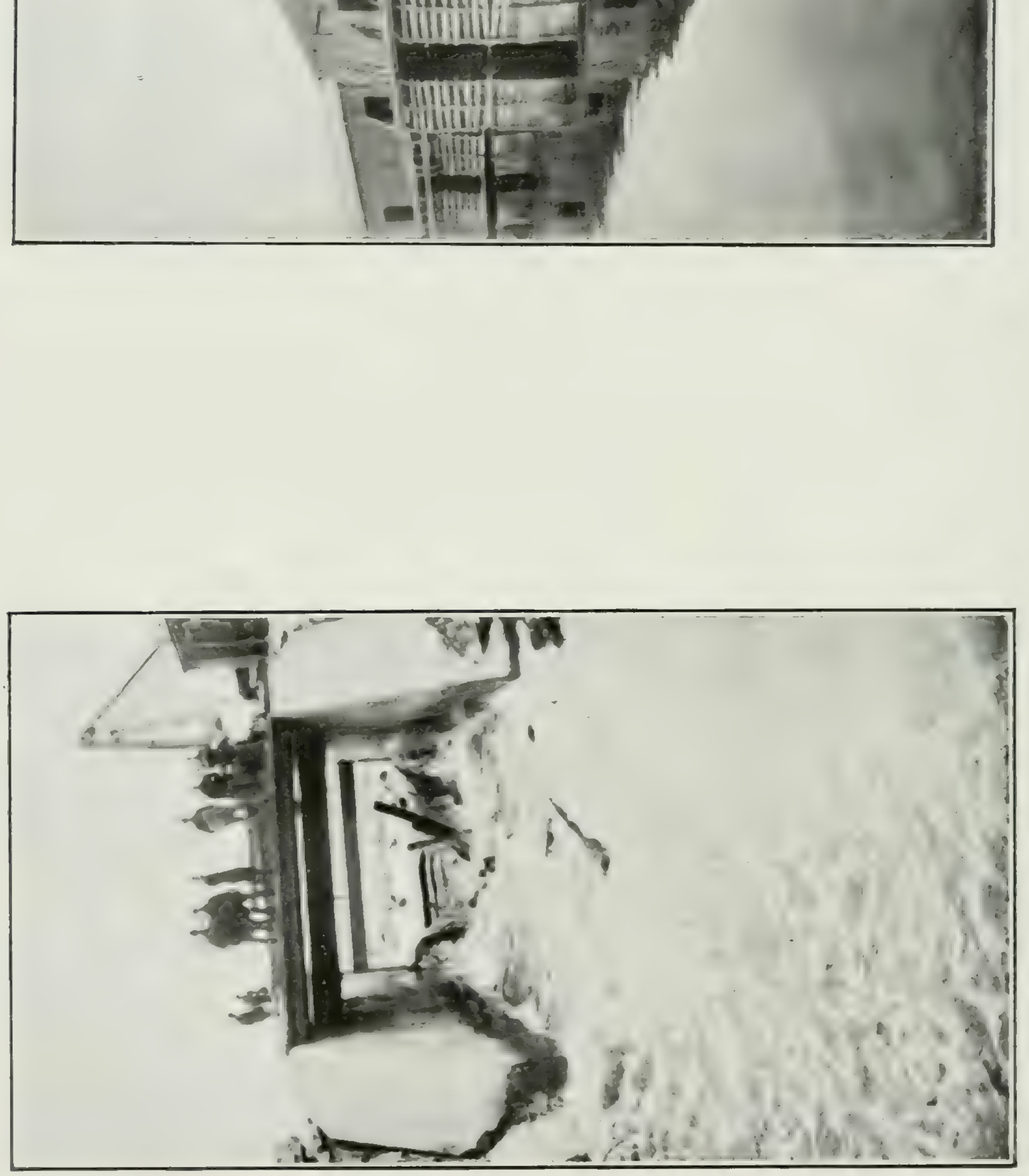
The concrete sluice and railway bridge across the sluice way were completed and logs were passed through about the middle of May, 1912.

Although only one dam was finished in Kipawa lake, yet during 1911-12 a considerable storage was held which certainly had a good effect upon the Ottawa during the winter. The elevations each month, April 11 to March 12 are shown in table page . . . . . .

From this it appears that a depth of five feet was liberated in 45 days corresponding to an increase of 3,500 c.f.s. to the natural flow of the main river.



No. 27—Gordon creek dam Wharf shed on cribwork piers to replace those which the proposed surface of Kipawa reservoir will affect.



No. 28—Gordon creek dam sluiceways. Saw logs passing through 17 April, 1912.

Plate No. 4

Romeo Brault, del.

Public Works, Canada.

OTTAWA RIVER STORAGE

GENERAL PLAN OF KIPAWA VILLAGE DAM

1912

LAKE KIPAWA

Line of Log Pass

Boat Channel

Stop log Sluceway and log Pass

Rock Fill Dam

Rock Dam

Shed

Shed

Quarry

Site of Contractors Camps

Winter Road to Lumsdens Mills

Hotel

KIPAWA VILLAGE

Station

Turn Table

GORDON CREEK

Pacific Railway

Canadian

Rapids

Rapids

Pier

Log Slide

Dam

North

C. R. COUTLÉE,
Engineer in charge.

SIR,—I have the honour to submit a report on the progress of the work on the dam across Gordon creek at Kipawa village from April 1, 1911, to March 31, 1912.

Early in April, 1911, a survey party was employed laying out the Gordon creek dam and making a careful survey of the village. On April 21, unfortunately Kipawa village was destroyed by fire and we were obliged to move to Mattawa, where we were engaged in checking up the elevations of the gauges between Mattawa and Klock Station, some 9 miles down river.

On June 3, the party returned to Kipawa village and under Mr. Blue were engaged until the end of August on the survey of lands to be affected by the construction of the dams on Kipawa Lake.

On November 2, Messrs. Morrow and Beatty, contractors for the Gordon creek dam, arrived to take over the work. By January 1., 1912, they had quarters for the workmen built and a steam plant for the rock work installed. The plant consisted of a steam engine and air compressor capable of running two rock drills, one steel derrick and hoist located in the borrow pit, and one wooden derrick on the sluiceway excavation.

Simultaneously with the rock work, the cribs for the freight sheds were placed and completed at the end of January, 1912. By the 31st March all the trestle work for the freight sheds and sidings was completed and the excavation of the sluiceway was within 50 feet of Gordon creek. The rock-fill dam, with the exception of top dressing was also completed and the cofferdam around the site of the concrete sluiceway was in place by the same date.

During the progress of this work an average of about 50 men were employed. There was one accident by which unfortunately a man lost his life.

I append herewith a statement of material delivered and cost of work to March 31, 1912 at the contract schedule.

Solid rock excavated to March 31, 1912, 6,190 cu. yds		$12,070 50
Loose rock excavated, 96 cu. yds		96 00
Common excavation, 360 cu. yds		360 00
Removal of existing dam, 329 cu. yds		329 00
Building concrete, 513 cu. yds		2,821 50
Placing steel shapes, 24,052 lbs		240 52
Timber in railway trestle...70,672 f.b.m		4,240 32
Timber in trestle for freight sheds, 7,108 f.b.m		1,563 76
Timber in crib work, 18,015 lin. ft		3,603 00
Stone filling for cribs, 1,867 cu. yds		3,734 00
Building and equipping freight sheds, 90,000 f.b.m		4,050 00
Raising buildings, bulk sum		140 00
Steel in drift bolts, 15,868		1,110 76
Unwatering, bulk sum	$1,200	1,000 00
		$35,359 36
Materials on hand—		
Timber for freight sheds, 10,000 f.b.m		$450 00

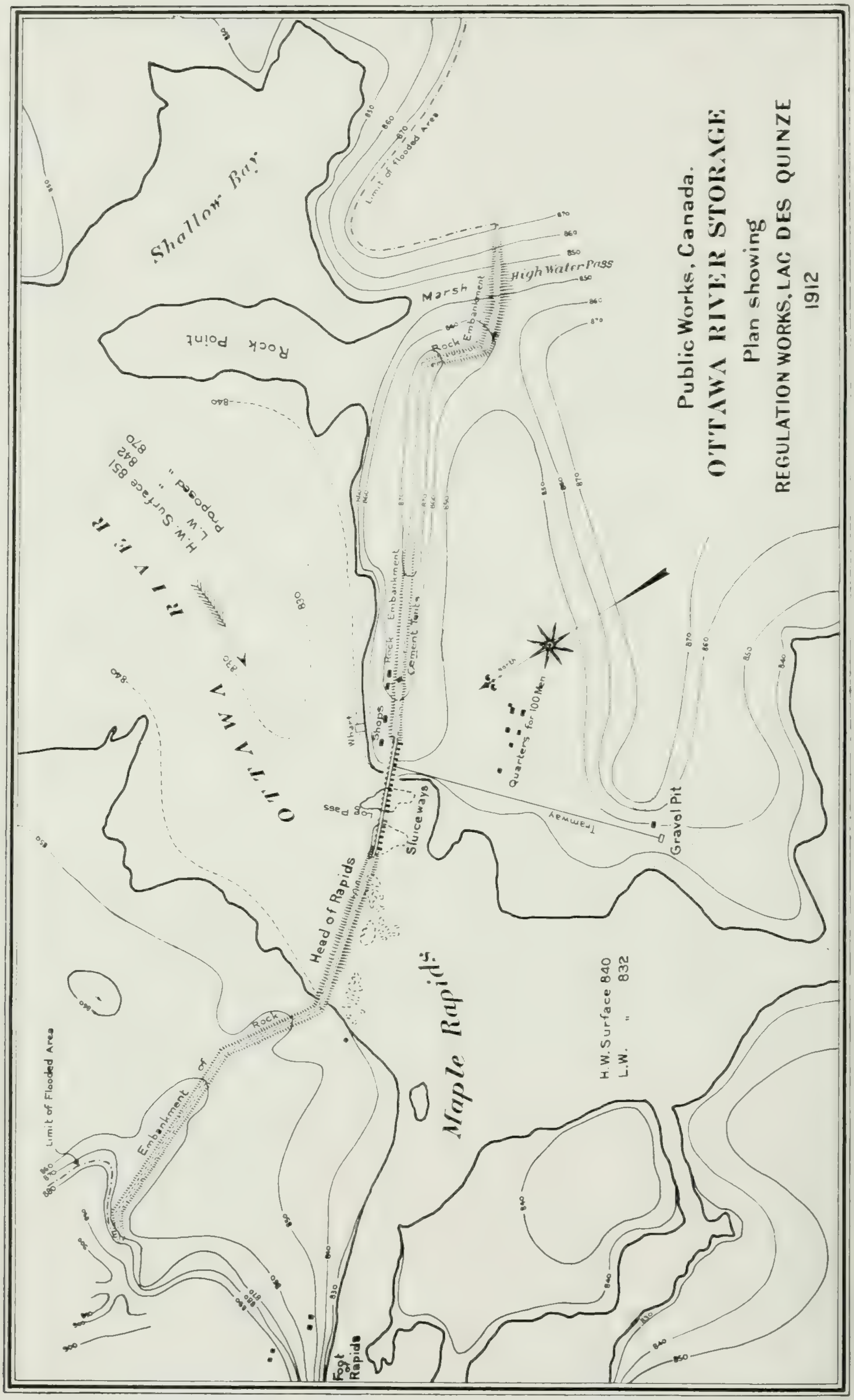
KIPAWA, QUE.
September 13, 1912.

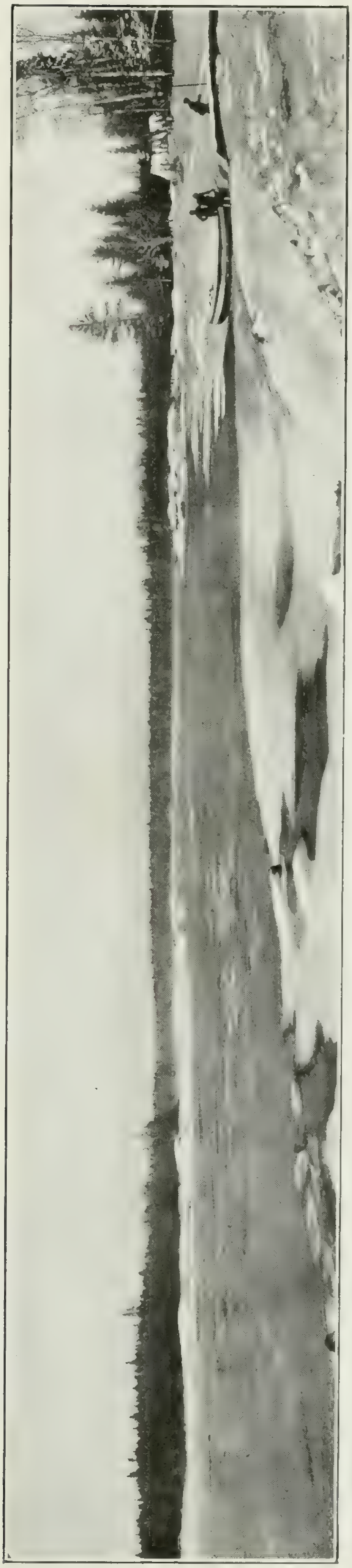
R. F. DAVY,
Assistant Engineer.



No. 29—Kipawa reservoir. Steamer *Alice* forcing through ice, Dec. 18, 1911.

Plate No. 5.


Public Works, Canada.
OTTAWA RIVER STORAGE
Plan showing
REGULATION WORKS, LAC DES QUINZE
1912
OTTAWA RIVER
Shallow Bay
Rock Point
Marsh
High Water Pass
Rock Embankment
Cement Yards
Rock Embankment
Wharf
Shops
Quarters for 100 Men
Tramway
Gravel Pit
Piers
Sluiceways
Head of Rapids
Maple Island
Foot Rapids
Rock
Embankment
Limit of Flooded Area
H.W. Surface 851
L.W. " 842
Proposed " 870
H.W. Surface 840
L.W. " 832



No. 30—Quinze dam. General view of dam site head of Maple Rapids looking down stream.

Quinze River Dam.

Cement was delivered upon the site during March, 1911, and stored in large tents. Unfortunately a bush fire swept over the district 29th May, 1911, and damaged some 2,000 barrels. It was only by the most strenuous efforts of the survey party, directed by Joseph Clement, that total destruction of the whole 6,000 barrels was prevented.

The small plant brought in at the same time as the cement was not however injured by the fire.

Toward the end of June it was decided to build the concrete of the sluiceways by day labour. The first necessity was a wagon road 6 miles long to connect with the main road from North Timiskaming. This was put under way at once and the first team passed over in August. The swamps crossed were however very wet and their drainage difficult, while the traffic had to be passed before a good surface was obtained. In this difficulty corduroy was the only resort and several miles of it were constructed over liquid mud. The total expenditure of clearing, construction of road and constant repair for the six miles of new road and some four miles of old road amounted to $10,000.

Till the road was completed, supplies had to be hauled through to Douglas Farm from North Timiskaming, loaded into boats, towed to the head of the river and portaged twice before reaching the dam site.

A pole saw was used to cut wood for the steam plant and a portable saw mill was set up at the beginning of July. These machines were operated by the alligator steamboat purchased from the Hawkesbury Company. It was hauled up on shore, one paddle wheel removed and replaced by a homemade wooden driving pulley, which was belt-connected to the saw mill. About 150 thousand of rough lumber was sawn for camps, housing plants and forms for concrete at a cost of about $22 per M.B.M., which includes about $17 paid for the logs.

Four camps were erected to provide for housing and feeding 100 men and a wagon transport was organized to bring supplies from North Timiskaming. Care was taken to build good camps and to make the labourers comfortable, while cleanliness and good order were required on the part of the men. Two sleep camps, each 20 x 40 were built, also a dining and cooking camp and an office and supply building.

The men slept one in a lower and one in an upper berth. The beds were movable, instead of being attached to the wall and straw ticks and good blankets were provided. There was constant danger of smallpox being brought in, so men were not allowed to import blankets and a doctor inspected the camp every week. A wash room with basins and towels was built onto each sleep camp and connected with the water supply. There was also a steam heated bathroom and a small building for rough laundry work, which was equipped with a hand washing machine.

The dining room and kitchen were in one building, 25 x 40; and fully equipped with graniteware cooking utensils and dishes. Water was piped to all the buildings, as well as the plant, from a 2,400 gallon tank which was supplied by a small steam pump.

Concrete work was begun on the north abutment of the sluiceways in August, 1911, on what appeared to be good solid rock On drilling into it however, for anchor bolts, it was found to be seamed and cross jointed so that it could be removed with a crowbar. In removing the shaky rock, seams of clay were



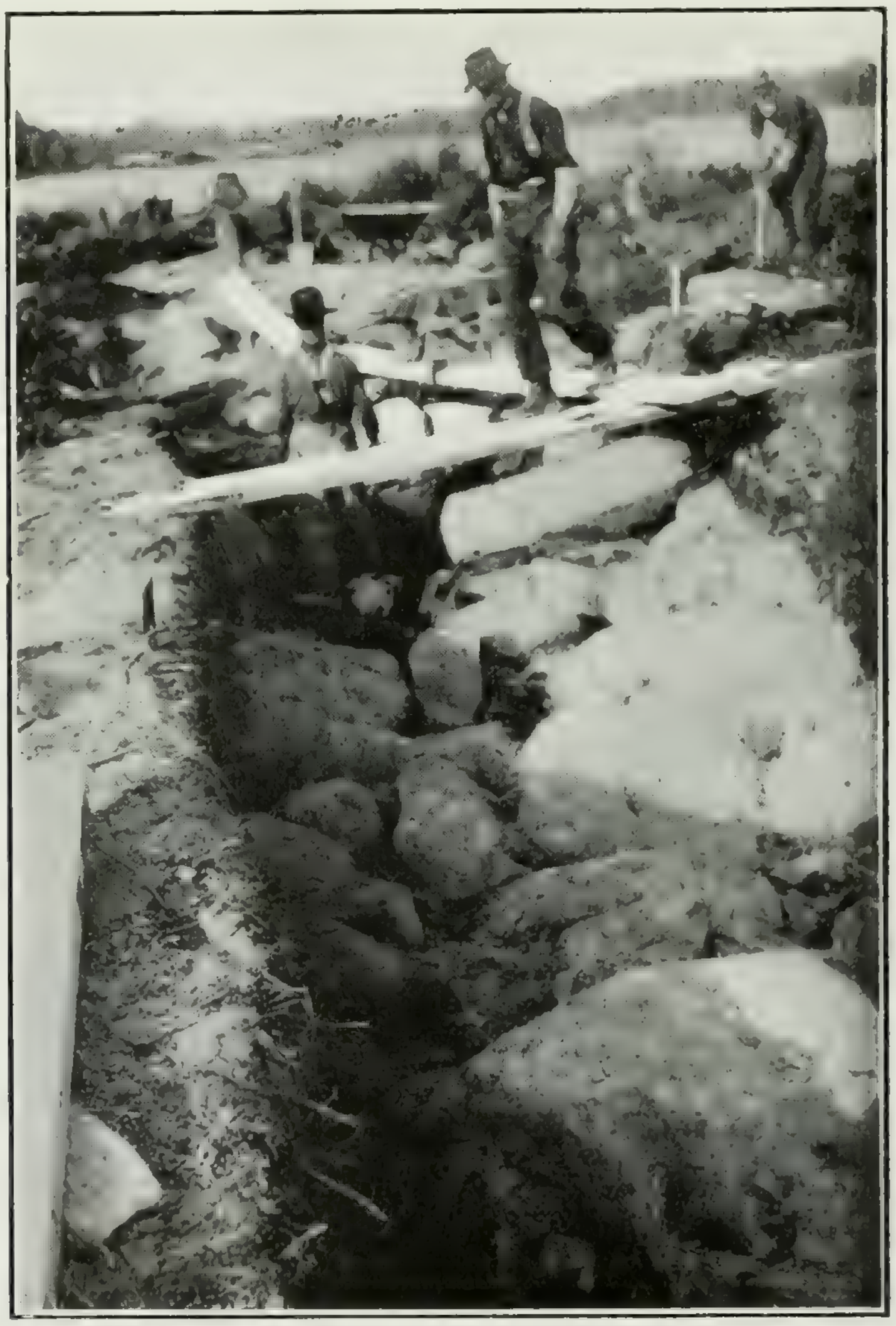
No. 32—Quinze dam site. Appearance of rock after removing top soil.



No. 32—Quinze dam site apparently solid rock which was found to be intersected by seams of clay.



No. 33—Quinze dam. Broken nature of rock disclosed by trenching.



No. 34—Quinze dam. Shattered rock disclosed by trenching probably due to an overthrust.

found beneath the surface which had to be removed for fear that the head of 25 ft., which would be imposed upon the foundation would blow leaks through. The work practically amounted to rock trenching and in many places it was necessary to excavate 20 ft., the average being 15 ft. Clay seams sometimes a foot thick were discovered 6 ft. down, in what on the surface appeared to be rock solid beyond suspicion. Small seams half to a quarter of an inch in thickness were interlaced throughout the whole mass. There was no equipment for handling rock and the transportation of heavy machinery over the bad roads, practically confined the excavation to hand work. I feel sure however, that the foundation secured can be relied upon, although the cost has been great.

The work of placing concrete was thus delayed by the unexpected necessity of excavating a cut-off trench in the rock from September until November, 1911, when only 600 cu. yds. of concrete were in place. By the beginning of January 900 cu. yds. more had been laid. It was found that the cement had taken up carbonic acid during the 10 months it had been stored in tents, subject to the great heat of last summer. For this reason a much richer mix was necessary and twice as much cement was used as expected.

The cold weather too into which the rock excavation forced the concrete work, necessitated stronger mixtures. It was frequently 20° below zero in this north country last winter and the gravel and water had to be heated with live steam. The average temperature of the concrete as placed was found to be 105° F. The weakening of the cement was placed in the hands of a testing company in Montreal to investigate and is still under consideration, as one year tests are desired. A rich mixture was used to offset the depreciation and the cold weather conditions, so that a solid concrete should result.

A large quantity of gravel of fair quality was found a quarter of a mile from the work, but it was necessary to screen it as there was too much sand. This was hauled by cars and horses to four mixing boards, which were housed in for protection against the weather. Steam was used for heating all the material and the mixing was done by hand, about 3,800 cu. yds. were laid and 5,000 barrels of cement were used.

The concrete was brought up to the level for the base of piers, both along the cut-off wall and along the base of each pier, piers Nos. 15 and 16 were covered by the mixing plant, and could not be concreted, but they are upon apparently good sound rock that need not be excavated.

On December 20 new plans and specifications were sent in for letting the work by contract, the cost being estimated at $250,000.00. The increase in the estimate over that of January 14, 1911, is due to more concrete being required on account of the deeper foundations, together with a higher unit price of $10.00 instead of $8.00 per cu. yd. The unit price for rock has been made $5.00 per cu. yd., and a steel and concrete bridge, including a 45 ft. log pass span has been substituted for a wooden deck. The estimate also includes an allowance of $26,000, for possible extra work.

The successful bidders were Messrs. Morrow and Beatty, who will finish the concrete work and also build the rock fill portion of the dam. The work done by the Department would have been difficult to secure from contractors and would have been the cause of many extras owing to the unexpected nature of the rock. It was necessary to build many small dams in the rock trench to cut off springs of water and in some cases, wooden cases had to be built to protect the fresh concrete from the wash of small leaks that issued with considerable force. All the works were closed up at the end of February and left in charge of a watchman, pending the beginning of work by the contractors. The detailed report of Mr. Hull, resident engineer follows.



No. 35—Quinze Dam. Excavating cut off trench through rock



No. 36—Quinze Dam. Cut off trench with anchor bolts for piers.



No. 37—Quinze dam. Cut off trench and anchor bolts for piers.



No. 38—Quinze dam. Forms set for concrete.

C. R. Coutlée.
Engineer in Charge.

Sir,—The work of constructing the sluiceways at Quinze Dam being completed as far as the cement on hand will allow, I beg to submit the following report on the results accomplished:—

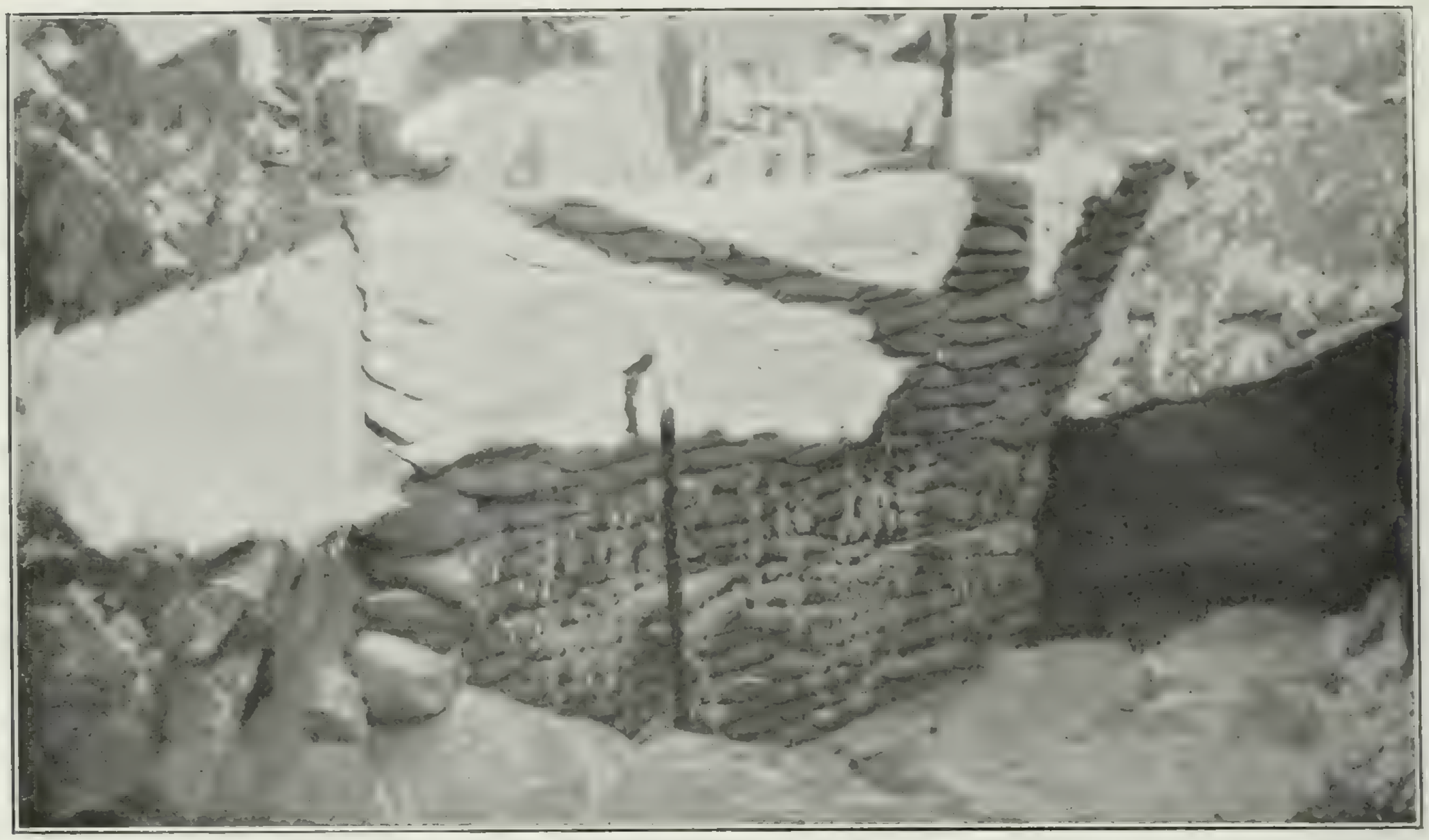
I met you by appointment at North Timiskaming on June 21 and you then gave me instructions to go ahead and complete the sluices by day labour. The plant hauled in during the winter had been taken across the river to the site of the sluices. This plant consisted of the alligator, which was purchased from the Hawkesbury Lumber Co., a small Chicago concrete mixer, sawmill, pole saw, elevator bucket for concrete, rails and wheels and axles for cars for transporting gravel for concrete, besides 6,000 barrels of cement which had been brought in during the winter.

During the winter of 1910 we had cut out a winter road from a point near the crossing of Fox creek by Klock's road to the proposed dam site, a distance of about six miles. We had also rebuilt an old lumber camp at the foot of the Maple Rapids which had been abandoned by Gillies Bros. Lumber Co., These buildings consisted of an old stable, which was afterwards turned into an office, and an old bunk house which was changed into a kitchen and dining room. These buildings were without floors or roofs and I had sufficient lumber brought in from Guerin over the new road to properly roof and floor them and to put in the necessary partitions. This work was all done by the men who were on the survey party and who afterwards assisted in receiving and storing the cement as it arrived.

In receiving the cement great care was used in storing it in the large stable tents which had been shipped from Ottawa, a heavy pole floor being laid on skids on the ground after the snow had been removed. Two tents were filled on the north side of the river with that cement which had been received at North Timiskaming, while three were necessary on the south side for that which had been received at Ville Marie and Guigues. The two tents on the north side were destroyed by a bush fire which swept over them on May 29, but by very hard work and the prompt receipt of another tent from Ottawa, the loss of cement was only 3745 barrels. After the fire, the cement was not sacked again until it was used in the fall, being stored in bulk and only enough of it sacked at that time to make a wall around the inside of the tent. In this way it was possible to get the contents of the two tents into the new one which came from Ottawa in response to a telegram advising of the fire.

Previous to the receipt of instructions to proceed with the work, we had started to cut out a new road for a distance of about two miles past our camps and which was intended to cut out some very wet parts and two lake crossings of the old winter road. Immediately on receipt of instructions to go ahead, I put a large crew at work, changing the old winter road to a summer waggon road, with instructions to improve Klock's road from the Guerin township line to the junction with our own road. A total distance of the road work was 7·59 miles. Work was continued all summer on this and the first teams to arrive at the camp over the new road did so on August 5. From that date on, the work was entirely that of putting it into better shape.

The necessity for using the new and uncompleted road to haul in new supplies, broke it up badly and made, when taken with the exceptionally wet



No. 39—Quinze dam. Cement bag cofferdam in pier foundation to defend work against leakage through rock seams.



No. 40—Quinze dam. Anchor bolts for piers set in concrete.



No. 41—Quinze dam. Seams of earth packed between rock layers.



No. 42—Quinze dam. Close view of typical earth seam in rock.

weather, a very muddy and bad road. Toward the latter part of the work, the clearance was widened out to a width of 200 ft. in order to allow the sun and wind to dry up the naturally damp soil. This clearance should allow the road to dry out and this year it will doubtless be a first class wagon road with very little work on it. A large amount of corduroy work was done in order to keep the road passable. The total amount spent on the road was $9,465.75 which is at the rate of $1,247.14 per mile. This is high, but when the exceptional conditions are considered it is not exorbitant. The cost of road construction adds 8.07c. per yd. to the total amount of yardage estimated for the structure.

On June 23 I ordered the first list of supplies and camp equipment for construction work. This and all other supplies and material received had to be hauled in to Klock's farm from North Timiskaming, a distance of sixteen miles, loaded into boats and towed to the head of the first rapid. From this point it was portaged by hand over the first portage and again loaded into boats and taken to the head of the second portage, from which point it had to be distributed by hand to the camps. This condition existed until the new road was opened on August 5. This method was very slow and expensive but was the only way in which it could be done as there was no road or access into camp, other than by water. The distance from Klock's farm to the site of the dam was about nine miles.

After the completion of the road, the distance from North Timiskaming to the site of the dam was seventeen miles, but as soon as Lake Timiskaming was frozen over and navigation closed, the haul was from New Liskeard, Ont., the distance was then forty miles to camp.

In the early spring, a scow for transferring cement and other material from one side of the river to the other, was built. The lumber for this was hauled in from North Timiskaming over the winter road before it broke up.

As soon as the ice was off Quinze lake on May 9, 1911, the alligator boat which had been purchased from the Hawkesbury Lumber Co., and which was at Klock's farm, was brought down from the head rapids and a portage cut to take her to the site of the dam. She was successfully taken past the rapids and hauled out on the bank on the north side of the river and rigged up to saw fire wood. This was done as there was a considerable amount of dry wood close at hand on that side of the river, while on the south side there was very little that was easily available . While in this position we cut some 90 to 100 cords of fire wood. This was afterwards taken across the dam site and used for making steam in sawing the lumber for the buildings.

On June 22, after receipt of instructions to go ahead, the men were put at work clearing a place for the saw mill and alligator. The mill was set up and the alligator pulled out and ready to saw lumber on July 8. The necessity for a saw mill was the fact that we could not get lumber delivered in sufficient quantities, owing to the difficulties of transportation and the high price wanted by the local mills. The lowest price I was able to obtain for lumber delivered at the dam was $35.00 per M. We were able by making an arrangement with Messrs. Gillies Bros. to take their logs out of the river and saw them ourselves, to make the lumber we wished and in the sizes required as we wanted them. This lumber cost on the dam site ready for use $21.79 per M. as per statement attached. Owing to the high water which was very swift at the proposed location of the mill, we were obliged at first to set it up at some distance up stream to avoid the swift current. After the water lowered, we were able to move the mill to a point where it could do all the balance of the sawing and set it up again, at the same time the alligator was supplying power for other purposes.

While lumber for the camps was being sawed the work of clearing the camp ground was in hand, and by the time the material was made, the ground and foundations were ready for building. The buildings, which consisted of two



No. 43—Quinze dam. Jointed formation of rock, the joints often filled with earth and roots.



No. 44—Quinze dam. Teams delivering cement at storage tents, winter, 1910-11.



No. 45—Quinze dam. Alligator steamboat hauled ashore and operating saw for cutting fuel.



No. 46—Quinze dam. Alligator steamboat hauled ashore showing paddle wheel replaced by belt pulley

bunk houses, one dining and cook camp and an office and store house, were in good enough shape to move into, though not completed on July 29. Until this time, the gang had been only about 40 men as there was no place to take care of them except at the engineer's camp where things were very crowded and uncomfortable until the new camp was ready to move into. The bunk houses were supplied with the movable double deck bunks and were able to take care of 42 men without crowding. The dining room would accommodate 90 men at each meal.

While the work of building the camp was in hand, a part of the crew, which was very small at that time, was working on the tramway to the gravel pit, the line of which had already been cut out. Considerable trestle work and crib work was necessary on this line which is about 1,500 feet long and runs from the gravel pit on an incline to the bins for gravel and sand, which were placed just up stream from pier 15.

Before any work had been done, a very good bed of gravel had been located about 1,500 feet from the site of the sluices and the tramway was necessary to haul out the material. The gravel proved to be too heavily sanded and it was found necessary to screen it. A screen was therefore built over the tramway track at the gravel pit and arranged in such a way that the gravel could be hauled by a team and scraper and dumped onto the screen. The material so deposited passed over the screen and fell into two cars placed to receive it; the gravel or rock into one car and the sand into another. The material which came from the stripping of the pit was used to ballast the track and the excess sand which came from the screen was dumped through the incline trestle to the bin. The cars were hauled by horse to the foot of the incline and were taken the balance of the way to the bin by a steel cable attached to a small belt hoist which was located at the upper end of the incline. During the winter the gravel pit became frozen to a depth of 5 or 6 ft., which necessitated blasting out each day's needs. The frozen pieces were broken up before screening and afterwards thawed and heated in the bins at the mixing plant.

By the time camps were completed, the gang had increased to about 80 men and the hauling of water became a serious problem. It was therefore decided to erect a water tank to supply the mixing plant and the camps with water. This was done and a pipe run to each of the buildings, furnishing a supply of running water to both kitchen and bunk house. A second-hand Fairbanks Duplex pump was purchased in Cobalt and located in the alligator. This pump supplied the necessary water for the tank and for the boiler feed as well, taking its supply direct from the river. The pipe was laid on the top of the ground at first as it was expected that the work would be completed before cold weather. This proved to be wrong however, and the pipe was afterwards paralleled with a $\frac{1}{2}$ in. steam pipe which was wired to the water pipe at distances of about 10 ft. These two pipes were afterwards boxed in and buried where practicable. This system kept the camps supplied all winter with running water and with no trouble from frost.

Preparation for the pier base construction was then begun. The sites of the piers were cleared and the brush and moss removed and burned. The low or first trestle, was built at elevation 852 in order to clear the tops of the bases which were at elevation 849.

The actual construction work was begun at the north abutment as the water was low enough to build the base, with only a small dam to divert the water which was passing over the rocks. Up until this time, all the indications were that we would only have to put the forms on the top of the rock as it stood. It appeared to be solid rock of the best quality, but on attempting to secure a bond for the concrete in the north abutment, in pier No. 1, it was found that the rock was seamed in such manner as to be easily removed in large pieces



No. 47—Quinze dam. Excavating gravel for concrete with drag scraper and trap dump.



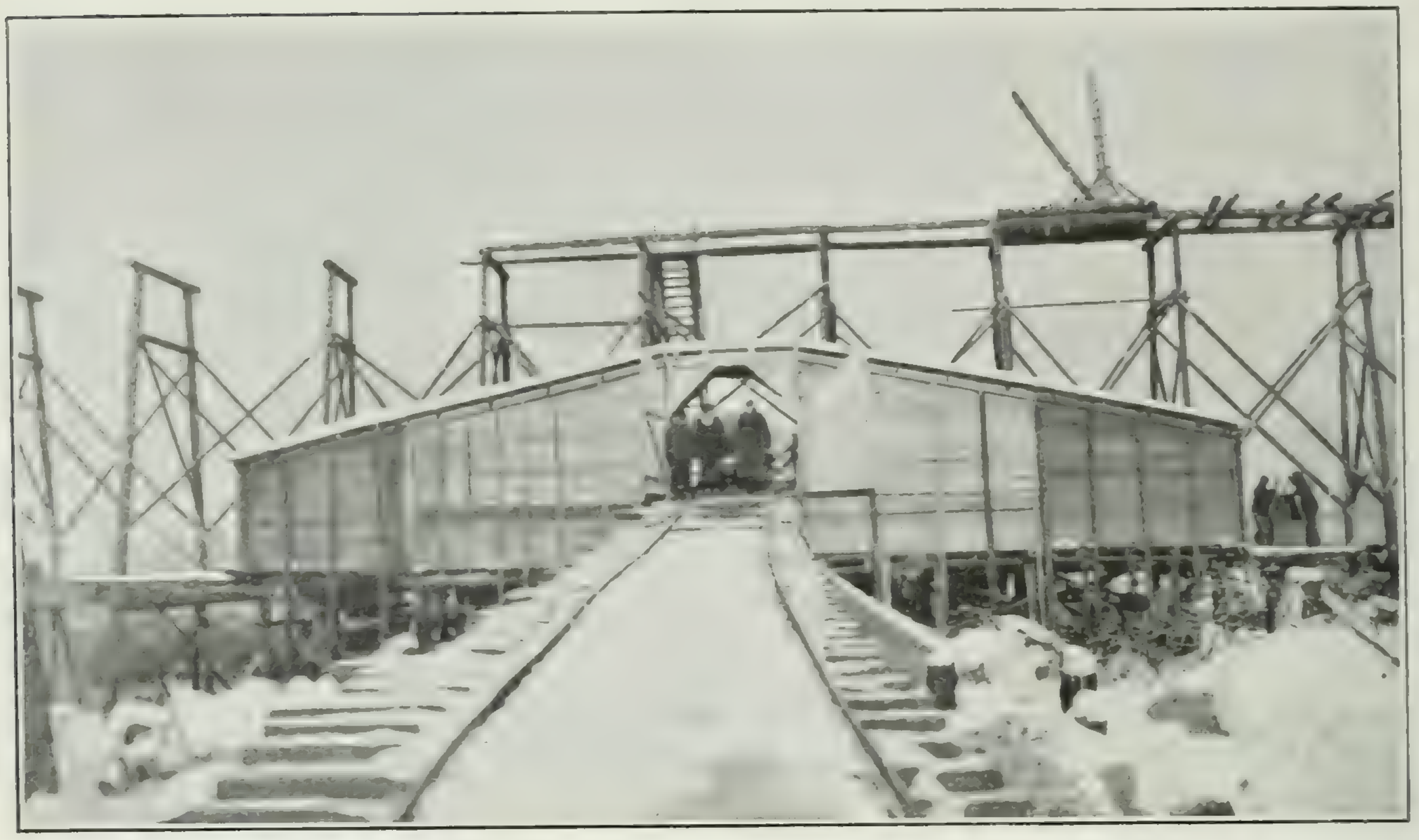
No. 48—Quinze dam. Gravel for concrete was dropped upon a sloping screen to separate the excess of sand from the stone.



No. 49—Quinze dam. Track from gravel pit to mixing platform.



No. 50—Quinze dam. Water tank and alligator steamboat set ashore to serve as powerhouse. Top of trestle is height of dam.



No. 51—Quinze dam. Shed over concrete mixing platforms and track from gravel pit. Gravel was hauled into shed and stored each side of track.



No. 52—Quinze dam. Concrete being dumped into cut off trench from steel push cars. Note steam rising from hot mixture.

with the aid of a crow-bar. Little notice was taken of this at first, but when it was found to continue to considerable depth it became a serious matter. We were far from being equipped for handling rock. To equip ourselves at this time with heavy machinery was a very difficult matter owing to the fact of bad roads and difficult transportation facilities and we were in consequence forced to go ahead removing rock practically by hand to secure proper foundations. The north abutment and piers 1, 2, 3, 4 and 5 were not such a difficult proposition, but when pier 6 was attempted it was found that the rock was cracked in V shaped pieces to a great depth and the work of removing this rock was a most difficult matter. In many places over the sites of the remaining piers, it was necessary to excavate to a depth of from 14 to 22 ft. Several clay seams and pockets of from 1 to 14 inches were found 6 and 8 ft. down, in what on the surface appeared to be solid rock and small seams of clay from a quarter to half an inch in thickness were found all through the rock. This of course increased the cost by a considerable amount as well as delaying the work beyond all expectation. A set of derrick irons were sent from Timiskaming in November and a stiff leg derrick was made on the ground. After this was in operation the work went much faster than previously and at a considerably reduced cost.

When the exceptionally bad rock which existed from pier 5 to pier 17 was encountered, the work of putting in concrete was necessarily delayed, as it soon caught up with the excavation development and it was necessary to stop putting in concrete until more foundations could be prepared. Our camps were too small to accommodate enough men to keep both the excavation and the concreting going on at the same time. All concrete was therefore held up until such time as the excavations were completed and mixing was resumed on January 3, 1912. We then began to fill the excavation with concrete in such a manner as to replace the original rock which had been removed. This was done up to an elevation which approximated the original surface of the rock. On this foundation the pier bases were built. The total amount of rock removed was 4,646 cubic yards at a cost as per statement of $3·074 per yard when it was originally expected that enough rock would have to be borrowed for displacers.

A plan and profile has been prepared showing the original condition, the amount excavated and the space which was filled with concrete in the excavation. A statement of the cost of excavation and cost per yard of concrete together with one showing the percentage of displacers put into concrete is attached.

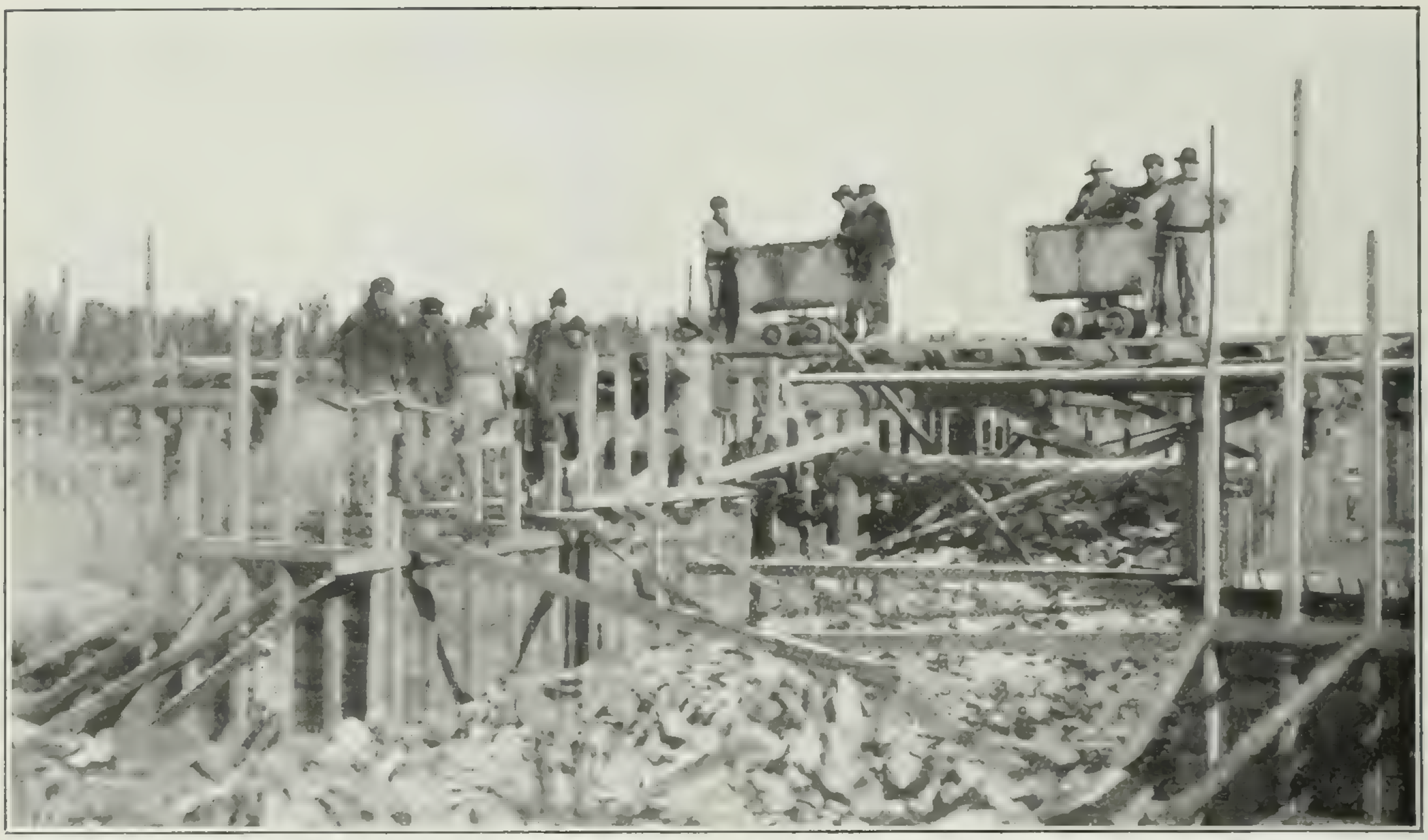
The amount of concrete placed was 3,752·01 cubic yards in the mixing of which 4,974 barrels of cement were used. The cement had become weakened from storage and it was decided to use two barrels instead of one to each yard of concrete.

Displacers were used as liberally as possible and the figures on the statement indicate that 33·76 per cent of 'plums' were put into the structure.

Work was delayed to no inconsiderable extent by the extreme weather conditions. The winter was very severe and many of the men suffered severe frost bites while at work. During the late fall the excess of rain over the watershed, caused the water in the river to rise to a flood stage and for about two weeks it flowed over the top of the cofferdam which had been built in front of piers 6 and 7. The work of excavating these was in consequence delayed.

Later in excavating the rock a flow of water appeared in pier 6 which made pumping necessary both night and day to prevent the flooding of the whole excavation. This leak was located and confined to a small space in the excavation, while the balance of the work was filled with concrete. When all, but the small portion in which the leak was confined, was filled the pump was taken off and the leak successfully stopped as it never appeared again.

Owing to the fact of weakened cement twice the amount originally figured on had to be used and in consequence there is not enough cement on the ground



No. 53—Quinze dam. Beginning concrete work, first pier base.



No. 54—Quinze dam. General view of sluiceways from up stream showing forms for piers partly erected.



No. 55—Quinze dam. Workmen leaving for dinner.



No. 56—Quinze dam. Kitchen of dining shack.



No. 57—Quinze dam. Dining room tables set.



No. 58—Quinze dam. Hauling logs to saw mill.

to complete the work. There is left only 564 barrels, or enough cement without displacers to make 282 yards of concrete and there yet remains 3,542·55 yards to be placed to complete the sluices.

Concrete was mixed and placed whenever the temperature was above 20° below zero. It was all mixed with hot water and all gravel and sand used were first heated by live steam. Repeated experiments show that the average temperature of the concrete after it was placed in the form was 41° Centigrade or 105·5° Fah. When the weather was too cold for mixing, the gang on the boards were kept at work clearing the site of the rock fill.

The plant employed was small and inexpensive in proportion to the size of the work. The alligator boiler is only a 20 H.P. and when helped out by a 10 H.P. upright boiler which was sent us from Timiskaming, produced power and steam for the sawmill, firewood saw, mixer, concrete hoist, derrick hoist, hoist for gravel cars, grindstone, two rock drills, water supply pump, excavation pump, three ejectors which took care of surface water and gravel heater. It also supplied steam for keeping the water system warm and for hot water in kitchens and for concrete mixing. The alligator in addition to this used her own cable in the early stages of the work for pulling large boulders and rocks clear of the site of the sluiceway. All displacers had to be thawed by steam before being placed in the concrete and steam was also used for thawing ice and snow in the excavation and forms.

With the small boiler capacity it was necessary to force them both day and night. This took a large amount of firewood and this item was an expensive and troublesome one. During the coldest weather, 22 cords were burned under the boilers every 24 hours, besides 5 cords in the camps and kitchen.

As the weather became cold, the fact developed that the mixer which we had, handled such small batches that it was impossible to keep the mixed concrete from freezing before it could be placed. We consequently abandoned the mixer and added two extra mixing boards to the two already built to help out the mixer. All four of these boards were housed in as a protection from the weather.

The snowfall during the winter was heavy and the expense of moving it from the works and thawing it in the forms was no inconsiderable item and its removal caused no little delay in the progress of the work.

The entire work was completed without serious accident to either the plant or the men. In fact it was only necessary to send one man to the hospital at Ville Marie as the result of any injury received on the work. This man was a teamster in the gravel pit and in moving a large piece of frozen gravel with his team, slipped and the frozen gravel rolling on his foot broke one of the smaller bones. It was not a serious injury.

On November 23 instructions were received to cut out a road following the telephone line, which had been built from the dam to Ville Marie, to a settlement known as St. Eugene. At this point there is a well-travelled road into the town of Ville Marie. This work was immediately put in hand and completed for winter traffic on December 24, the distance is 7 miles.

During the season past, the contours of Quinze lake at the proposed high water mark and 5 ft. above it, or elev. 870 and 875 have been run completely around the lake, from the mouth of Smooth river or Little Roger to the east boundary of Latulippe township. This work has been plotted onto the maps of the reservoir. This leaves only a small part of Quinze lake remaining to be contoured. A party is now on the ground, supplied with all necessities to last them until June 1. They will complete the contours on Quinze lake and carry them into Lake Expanse until otherwise instructed. Unless they are moved to other work, they should be through with the contours of the Quinze-Expanse reservoir by the middle of the coming September.

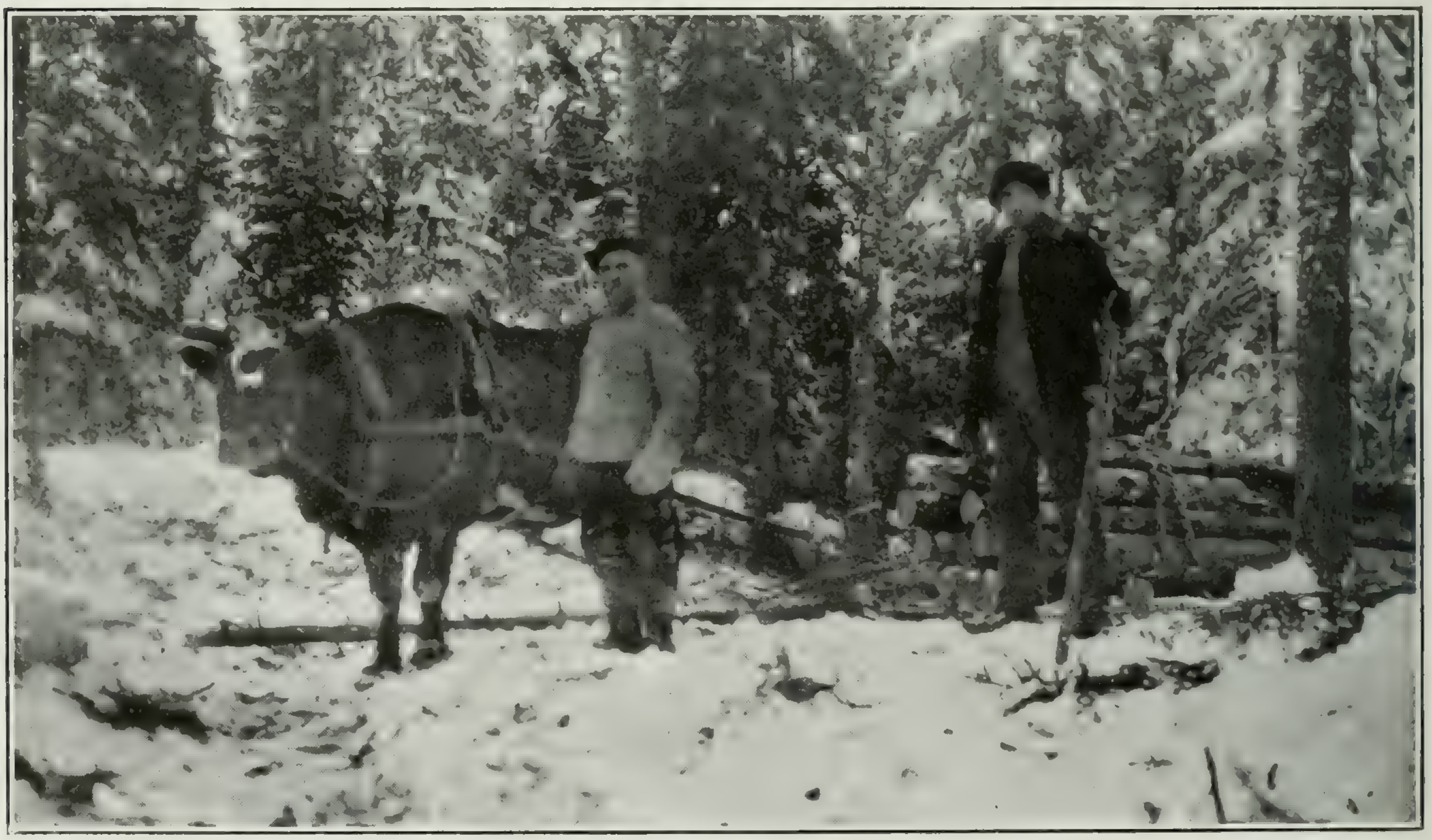
A series of photographs of the construction work, together with a statement of expenditure and cost is attached. These give a good idea of the job and the manner in which it was conducted.

Respectfully submitted,

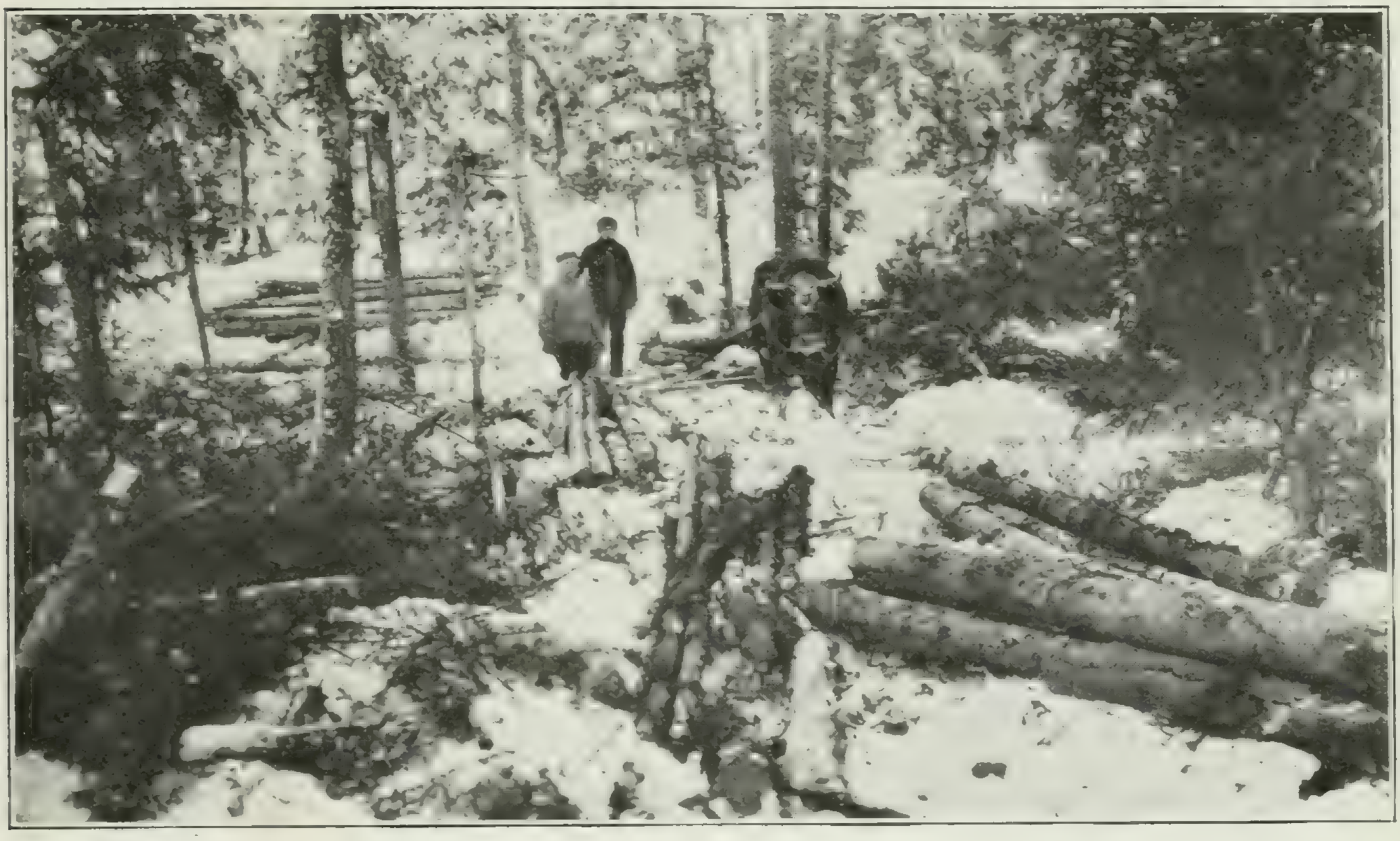
G. B. HULL,
Ass'l. Engineer.



No. 59—Quinze dam. Hauling logs through bush to saw mill. Note snow held on branches which evaporates without ever reaching the ground.



No. 60—Quinze dam. Hauling logs in bush with ox.



No. 61—Quinze dam. Logging in bush with ox.



No. 62—Quinze dam. Logging in bush with ox.

Statement of Expenditure on Quinze-Expanse Reservoir.

TO FEBRUARY 29, 1912.

For Rock excavation	$ 14,280·99
" Concrete and anchor bolts	44,192·44
" Clearing	508·01
" Forms unused	979·34
" Trestles unused	802·37
" Ville Marie Road	1,031·22
" North Timiskaming road	9,465·79
" Surveys-examinations, &c	18,483·31
Material on hand	22,192·89
	$ 111,936·36

Statement of Concrete put in at Quinze Dam.

North abutment and piers 1, 2, 3, 4 and 5..				704·00	c. yds.
Pier 6 and block from pier 5				118·50	"
" 8	"	"	6	177·84	"
" 9	"	"	8	123·73	"
" 10	"	"	9	115·70	"
" 11	"	"	10	125·02	"
" 12	"	"	11	122·57	"
" 13	"	"	12	125·99	"
" 14	"	"	13	130·15	"
" 15	"	"	14		"
" 16	"	"	15		"
" 17	"	"	16	77·77	"
" 18	"	"	17	83·28	"
" 19	"	"	18	45·90	"
South abutment and block from pier No. 19				64·56	"
Concrete in foundations				1,737·00	"
Total				3,752·01	"

The above amount of concrete used 4,974.66 barrels of cement, which at 2 barrels per yard made 2,487·33 yards of concrete. This against the total above—3,752·01 cu. yds.—indicates an average of 33·71% fillers.

Total cement received at dam		23,712 sacks or 5,928 bbls.	
Loss by fire	374·5	bbls.	
Loss by wet	14·5	"	
Used	4,974·66	"	
	5,363·66	"	5,364 bbls.
Cement on hand	2,256 sacks or 564 bbls.		

Statement of Concrete yet to go into Quinze Dam.

North abutment	365·00	c. yds.	
Pier No. 1	149·21	"	
" 2	149·21	"	
" 3	149·21	"	
" 4	149·21	"	
" 5	149·21	"	
" 6	149·21	"	
Block above Elev. 849·00	50·00	"	
Pier No. 8	149·21	"	
" 9	149·21	"	
" 10	149·21	"	
" 11	149·21	"	
" 12	149·21	"	
" 13	149·21	"	
" 14	149·21	"	
" 15	149·21	"	add found. and base.
" 16	149·21	"	" "
" 17	128·00	"	
" 18	128·00	"	
" 19	128·00	"	
South abutment	304·40	"	
	3,331·55	"	
Deck reinforced-approximately	211·00	"	
	3,542·55	"	

Quinze Dam.

To cost of logs bought from Gillies Bros	$2,005·11
" logs made by P. Wks. Dept	249·19
" making logs by P. Wks. Dept	336·30
" booming, drawing and sawing lumber ties, etc	1,176·90
" erecting sawmill—twice	421·32
	$4,188·82

Amount of lumber sawed	165,000	ft. B.M.
" squared stuff, ties, etc	27,188	"
Total	192,188	"

$$\text{Cost per M.} \ldots\ldots \frac{4188\cdot82}{192188} = \$21.79 \text{ per M.}$$

Cost per M. ft. B.M. for sawing	$6·12
" including mill erection	8·31

Quinze Dam.

STATEMENT OF COST OF MEALS AT CAMPS "A" AND "B".

Camp "B" from July 1st., 1911, to March 1st, 1912.

Total number of meals given during above period. 51,729
Total cost of meals including all items..... $8,133·58

$\frac{8133·58}{51729}$ = 15·72 cents per meal, or 47·16 cents per day per man.

Camp "A" from July 1st., 1911 to March 1st., 1912.

Total number of meals given during above period. 15,937
Total cost of meals including all items..... $2,789·08

$\frac{2789·08}{15937}$ = 17·5 cents per meal, or 52·5 cents per man per day.

Statement of Costs—Quinze Dam.

Rock excavation cost:—
$14,280·99 for 4,646 cubic yards, or..... $3·074 per c. yd.
Mixing concrete cost:—
$19,191·21 for 3,752·01 cu. yds., or..... $5·088 per c. yd.
Cement cost delivered for use $3·9868 per bbl.
Setting anchor bolts cost:—
$1,367·40 for 33,140 lbs. or..... $0·041533 per lb.
Clearing cost:—
$508.01 for 18·5 acres, or..... $27.46 per acre.
Ville Marie winter road cost:—
for skidding and widening only—7 miles—
$1,031.22 or ..... $147.31 per mile.
North Timiskaming summer road cost:—
$9,465.79 for 7·59 miles or..... $1,247·14 per mile.



No. 63—General view of the metering sections on the Quinze river at North Timiskaming, Que.

METERING.

Some extra gauges were placed during the season, one at La Passe and one at Pembroke to ensure a better record of the rise and fall of the river. All the gauges are more or less unsatisfactory owing to log jams in the outlets below them, or ice conditions. It is found that frequent meterings alone can determine the flow during the winter season.

The rainfall over the Ottawa for 1911 was under the average and the ground water supply was practically depleted. Notes were taken regarding many wells to establish the condition of ground water and these will be repeated from time to time.

Quite a difference is notable in the rainfall over different parts of the valley during the same months. The average run off, however, has been found to closely approximate 1 cubic foot per second per square mile for the whole year. This was the figure originally determined during the Georgian Bay Survey five years ago.

In July and October, 1911, meterings were made of the St. Lawrence river near Cedars, Que., and at Lanoraie nine miles above Sorel, to ascertain the effect that an equalized flow in the Ottawa will have upon the Montreal harbour. This work is being continued and the results will be valuable in connection with proposed works on the St. Lawrence.

SURVEYS AND OFFICE WORK.

An accurate plan of the river between Hull and Ottawa has been compiled from original surveys with especial reference to the Chaudière power houses. This is being kept up to date so that a reliable record is available in case of further disputes concerning the water powers.



No. 64—Rating current meter from a launch in quiet water. The launch is run over a course 200 feet long at speed varying between a fraction of a foot per second up to eight feet per second.



No. 65—Rating current meter from a car in winter. A channel is cut 200 feet long in the ice and the car run over a hundred foot course.



No. 66—Current meter rating car. Bracing attached to horizontal arm is removed when it is required to give the meter a slight vertical motion resembling that of wave action on a boat.

C. R. Coutlée,
Engineer in charge.

Sir,—The general development of water powers in every country is accentuating the great value of our Canadian water courses, and is every year adding to the importance of the hydraulic investigations in progress throughout the Ottawa river watershed.

It has been stated that the northern watershed of the St. Lawrence river will become the greatest of industrial districts, rivalling in manufacturing productiveness and activity even northern England and at the same time maintaining a collateral activity in agricultural productiveness and in lumbering. This forecast is based upon the natural resources of the area referred to, the greatest of these assets being the unsurpassed extent and distribution of its water supply.

As the Ottawa watershed forms one of the two natural divisions of this area, the securing of some adequate knowledge of the value of its unrivalled series of water-powers becomes increasingly important as this value increases with the country's development.

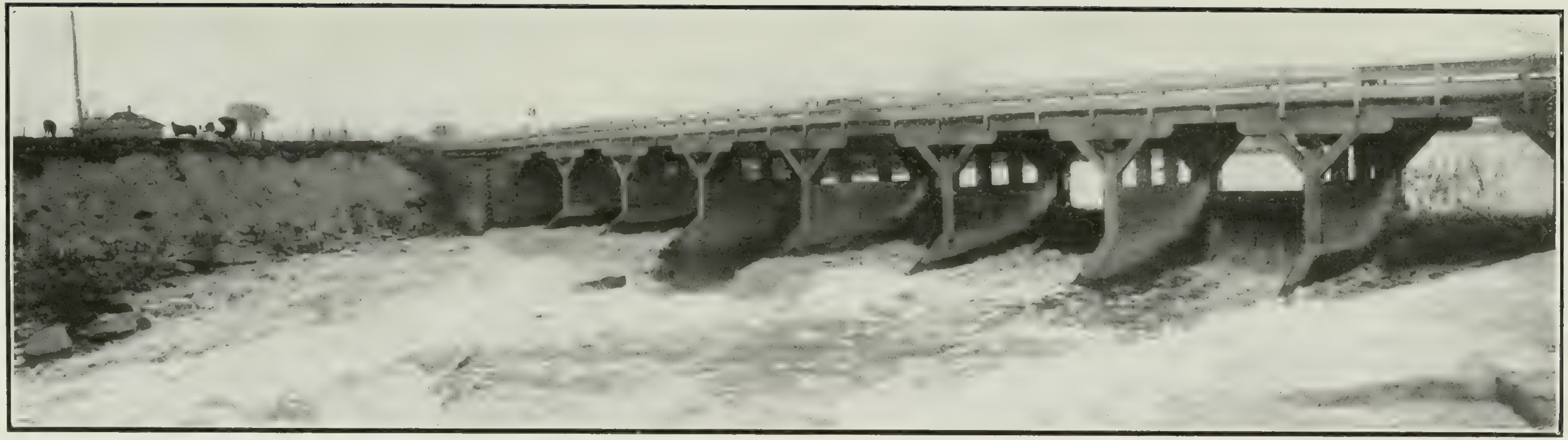
For this work the Government has the great advantage of the fore knowledge of these inevitable future developments, whilst the various water-courses are as yet practically in their primitive condition, that is whilst they are with but few exceptions, unobstructed by power developments. Thus thorough investigations are still possible for ascertaining the natural run-off from each individual watershed of the Ottawa and its tributaries.

The following short report with the accompanying diagrams indicates that the Government has been alert in taking advantage of this opportunity for gathering comprehensive and detailed data. This past year's work has not only continued the work previously reported but has to some extent amplified it. This is shown in the diagrams and tables following, which in most cases are continued from the 1910–11 report, the newer ones naturally indicating the expansion following the results of further investigations.

The department has already had experience of the difficulty, and in some cases, the impossibility of obtaining accurate measurements in localities where power developments had been established. Therefore the work on the channels in question has been pursued with the determination to arrive at all necessary data, while the possibility exists of collecting accurate measurements under the present unobstructed conditions.

The following is a summary of the main features of the year's work.

The distance between the gauges at Deschenes lake and Klock station is 190 miles. This proved too great for accurate estimates of the flow at the important reaches intervening, therefore new gauges were placed at intermediate points, viz.: La Passe and at Pembroke. A gauge was also placed during the year on the Ottawa river at the foot of Maple rapids. Five were placed on the St. Lawrence river, four between the Coteau and Cascades rapids and one at Lanoraie 9 miles above Sorel, these are included in the list of gauges, etc., following. The gauge below Maple rapids on the Quinze river will be used to arrive at the flow of the river when construction work starts on the proposed dam. The elevation of Quinze lake would then be useless as a criterion of the flow as the fluctuation in the lake would be controlled not only by inflow into the lake but by any



No. 67.



No. 68—Dam and sluiceways on the Rideau river at Hogsback. These control the level of the reach between Hogsback and Black rapids. There are 12 sluices, 20 feet wide and one 10 feet. They will allow well over the maximum flow of 14,000 cubic feet per second to pass down the river.

obstructions at the dam site, and later by the opening and closing of the sluices.

The gauges at Pembroke and LaPasse give the water surface fluctuation at intermediate stations between Britannia Bay and Klock station. The one at LaPasse at the foot of Coulonge lake is important because it is the only established metering station above Ottawa before reaching Deux Rivières. Both above and below it, large tributaries flow into the Ottawa river.

Current meter measurements were continued from last year at different points on the watershed and are listed on pages 177 to 180; they, in most cases, show that the conditions surrounding the discharge stations remain practically unchanged since this work was begun. The only large variations from the discharge curves being from the results of meterings made during the winter. It has been found impossible to arrive at the flow of most of our rivers during the winter months by any other method than by making frequent meterings. The gauge heights in some instances gave as much as 130% too large discharges when referred to the summer discharge rating curves, we therefore no longer use these curves in computing the winter flow. The effect of ice jamming at the governing points was particularly noticeable on the Gatineau river, the river is of such a turbulent nature that frazil ice has a greater chance to form than it has on rivers with fewer falls and rapids.

The daily discharge diagrams for most of the rivers show the winter flow as estimated from only occasional current meter measurements. The run-off from the watershed does not vary in winter as it does during the summer, therefore the estimated daily flow between the dates of metering are considered to be fairly accurate.

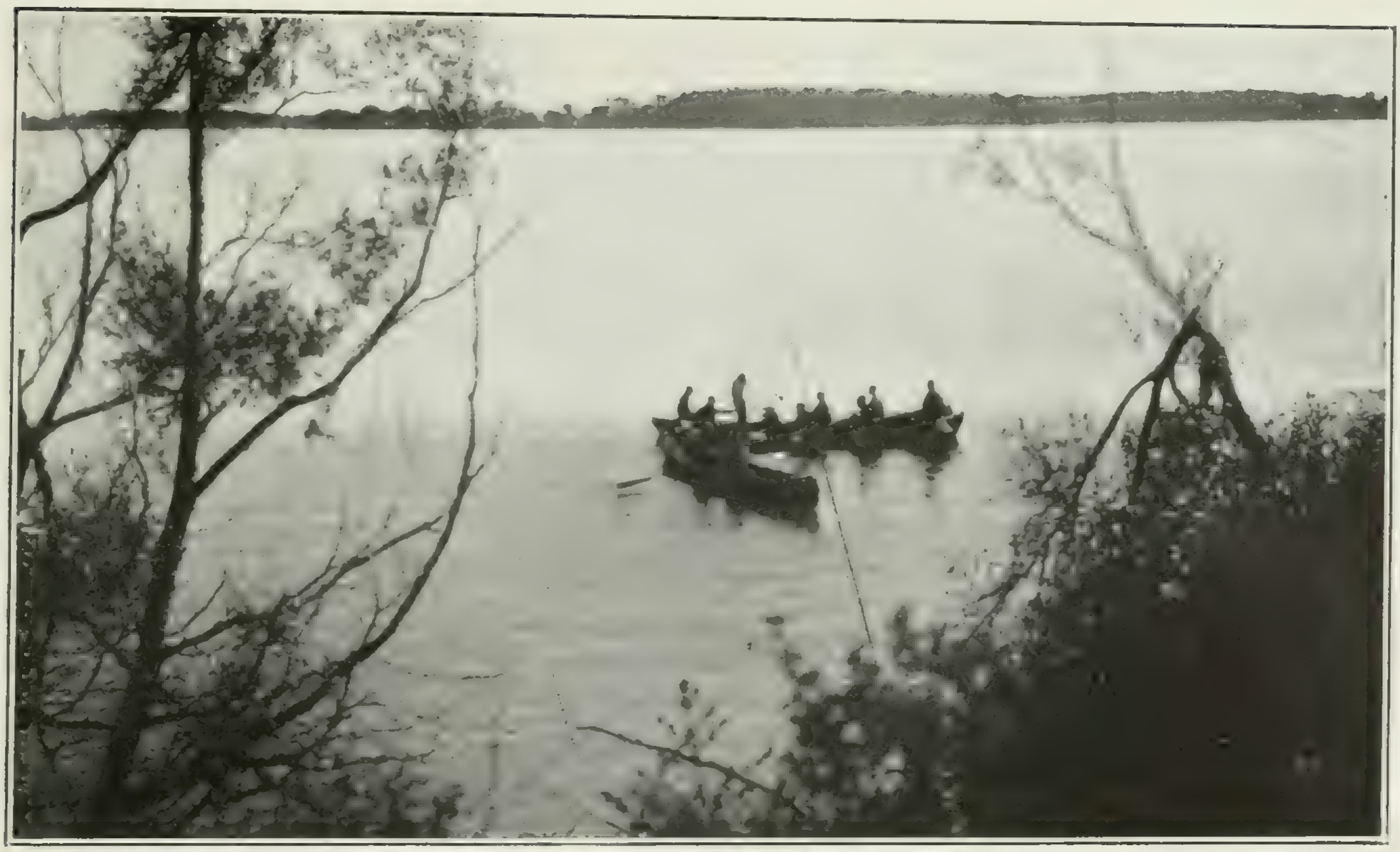
The average rainfall for the Ottawa valley for 1911 was 30.9 inches, slightly under the average for 41 years. Although this was greater by 14 inches than the lowest year on record (1868), the percentage of rainfall reaching the river was much less than in that year. This fact presents an interesting problem. Throughout this district wells that had never before been known to go dry were completely useless for the whole of November. One farmer for instance who had 60 head of cattle kept a man and team doing nothing else for the whole month than drawing water for them. Although the majority of the wells have had to be deepened during the last 20 or 25 years, only bored wells or those fed by good springs kept up their supply during last autumn.

The average run-off for the Ottawa watershed above Ottawa, from the 1st of April, 1911 to 31st March, 1912, came to 1 cubic foot per second per square mile.

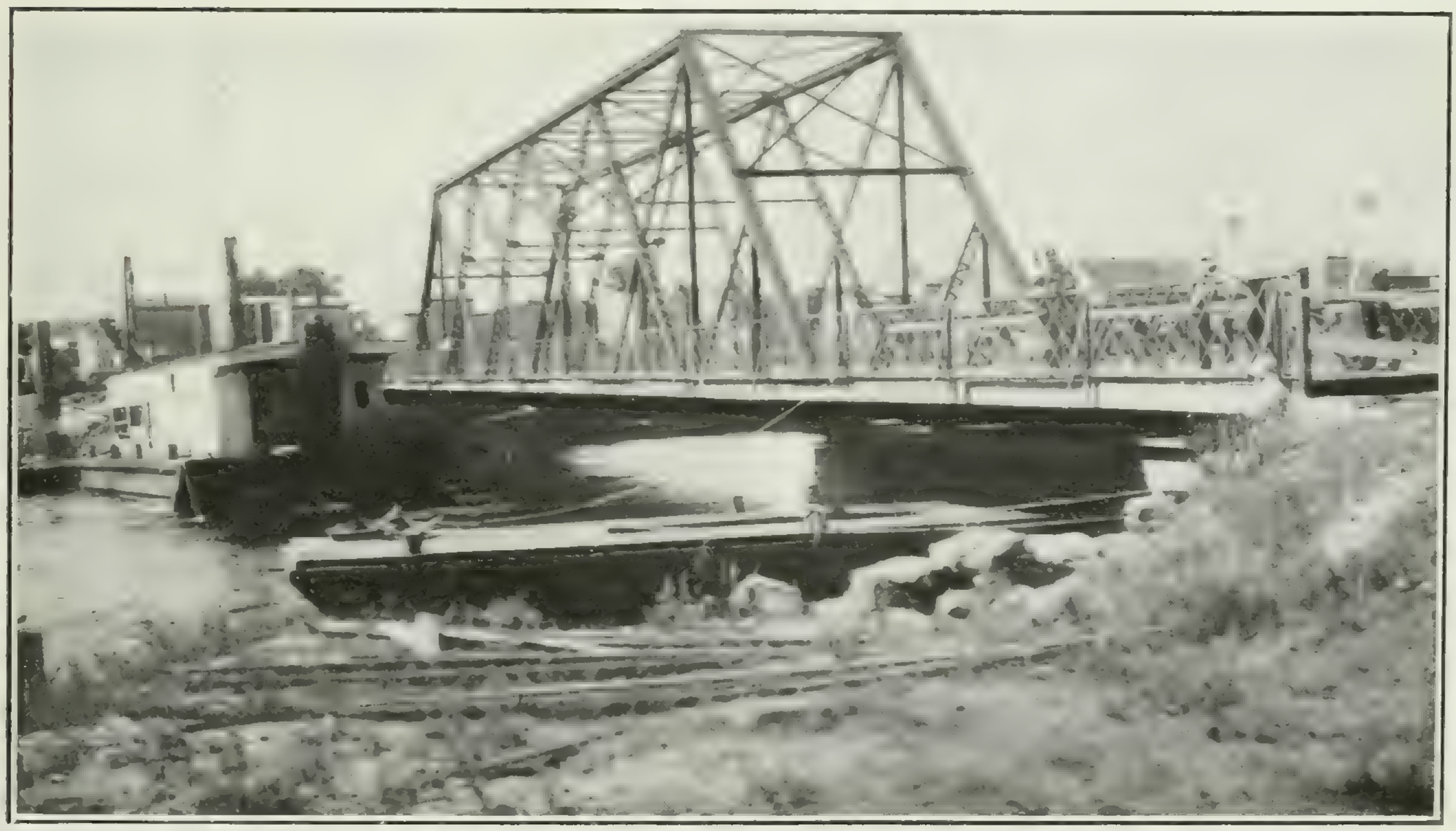
The low water at the Quinze came to 0·35 c.f.s. per square mile, while at Timiskaming and Klock it did not go below 0·40, this latter was due to a small amount of storage being utilized out of Kipawa lake. At the Chaudière it went down to 0·36 and at Besserer's Grove still lower to 0·35, this being the same run-off as at Quinze river where natural conditions still remain. Storage having been affected on Kipawa lake, water was utilized during the low water period of last autumn, resulting in a small but noticeable increase of flow below Mattawa, but evidently not sufficient to effect the flow be'ow Pembroke.

Through the courtesy of Mr. R. F. Stupart, Director of the Dominion Meteorological Service, monthly returns are received giving the daily precipitation from stations on the Ottawa valley. These figures supplemented by those from our own stations at Timiskaming, Kipawa and the Quinze, and the Meteorological abstracts printed monthly by McGill College, Montreal, have made it possible to construct the diagrams shown on plates 8 to 10.

These plates show monthly percentage of rainfall which finally reaches the Ottawa river at each metering and gauging station. They also show the accumulated discharge and precipitation expressed in inches as having been retained

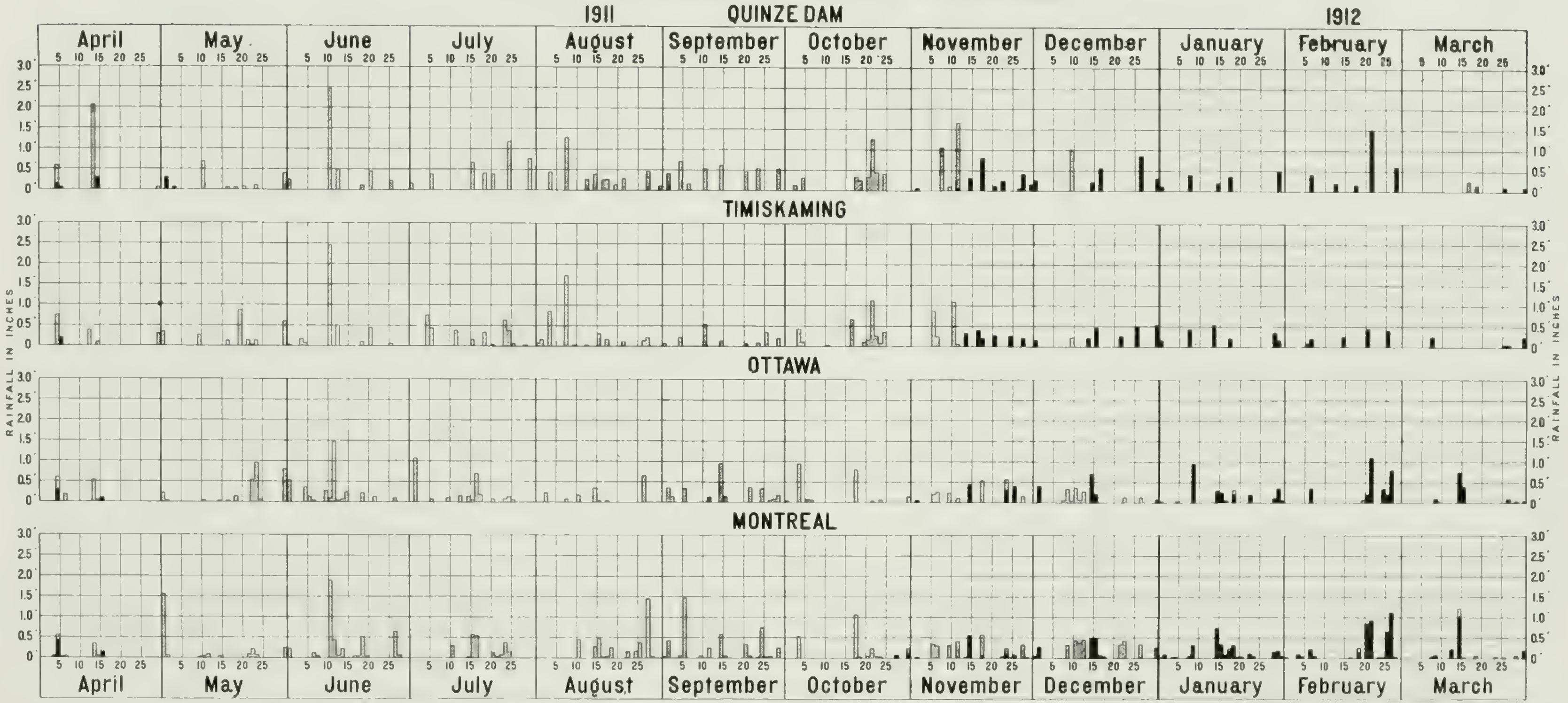


No. 69—Metering section on the St. Lawrence river between the Cedar and Coteau rapids. Picture shows party of engineers with two boats attached preparing to meter.



No. 70—The back channel at Valleyfield shewing dredge belonging to the Montreal Cotton Company at work. This Company uses from 6,500 to 7,500 cubic feet per second out of Lake St. Francis to develop about 7,000 horse-power. Working under such a small head every cubic yard of material taken from the shallower sections of this channel is of considerable value in allowing a free discharge from the turbines.

DAILY PRECIPITATION IN THE OTTAWA RIVER VALLEY



Rainfall shown thus ▯
Snowfall .. . ▮

NOTE - The snowfall is reduced to its equivalent in water, averaging about 10% of the fall

1911 MONTHLY PRECIPITATION 1912

April		May		June		July		August		September		October		November		December		January		February		March	
Quinze Dam	3.035	Quinze Dam	1.700	Quinze Dam	3.985	Quinze Dam	3.905	Quinze Dam	3.800	Quinze Dam	3.850	Quinze Dam	3.380	Quinze Dam	4.900	Quinze Dam	3.150	Quinze Dam	1.550	Quinze Dam	2.850	Quinze Dam	0.590
Timiskaming	1.750	Timiskaming	2.495	Timiskaming	3.875	Timiskaming	3.105	Timiskaming	3.630	Timiskaming	1.617	Timiskaming	3.220	Timiskaming	3.885	Timiskaming	2.310	Timiskaming	1.800	Timiskaming	1.375	Timiskaming	0.575
Ottawa	1.470	Ottawa	2.800	Ottawa	3.640	Ottawa	2.790	Ottawa	1.470	Ottawa	2.980	Ottawa	2.100	Ottawa	2.950	Ottawa	2.680	Ottawa	2.610	Ottawa	3.045	Ottawa	1.420
Montreal	1.230	Montreal	2.610	Montreal	4.370	Montreal	2.170	Montreal	3.730	Montreal	4.270	Montreal	2.300	Montreal	3.260	Montreal	4.380	Montreal	2.880	Montreal	4.290	Montreal	1.980
Mean Total	1.871	Mean Total	2.401	Mean Total	3.967	Mean Total	2.992	Mean Total	3.157	Mean Total	3.179	Mean Total	2.750	Mean Total	3.749	Mean Total	3.130	Mean Total	2.210	Mean Total	2.890	Mean Total	1.141

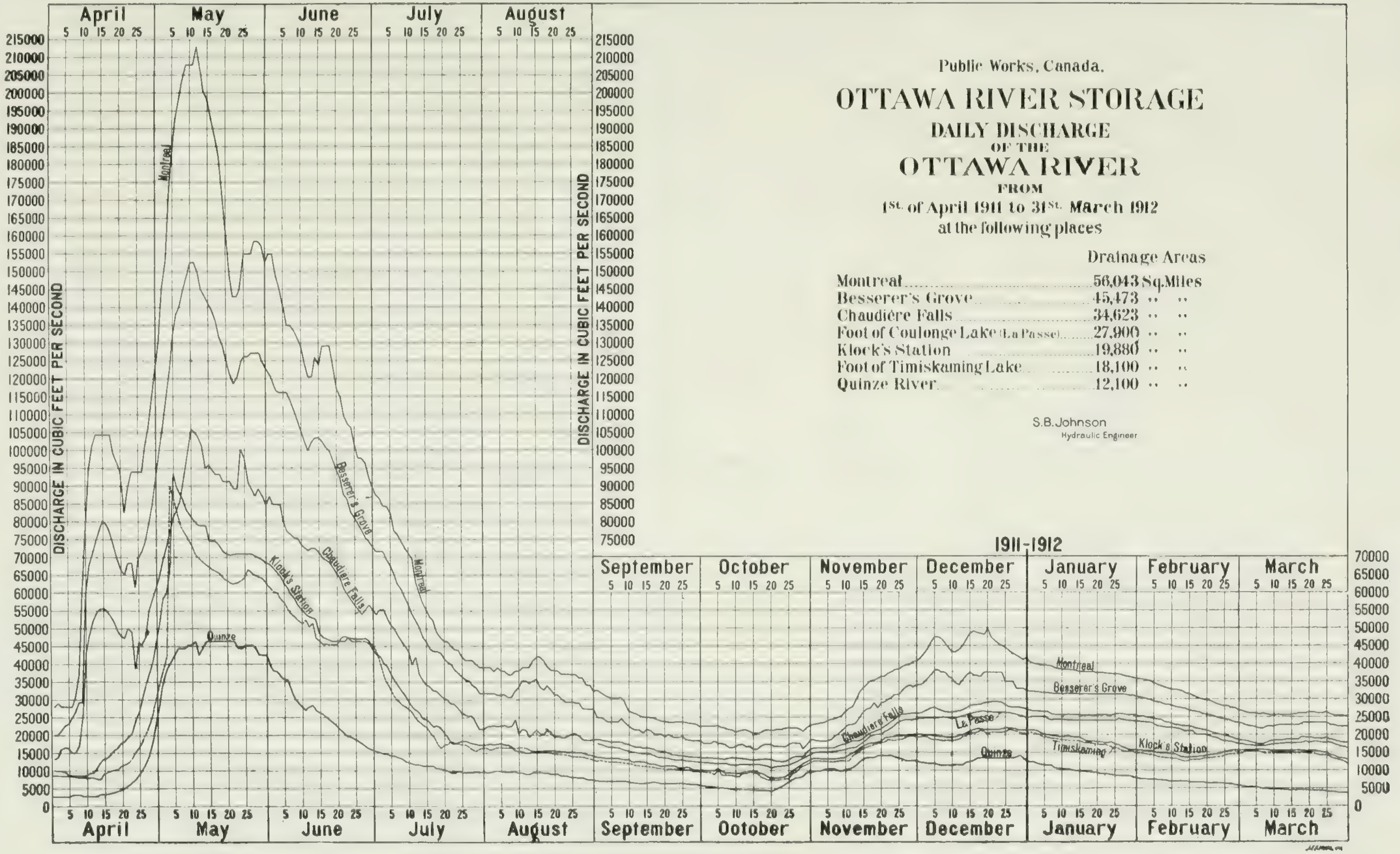
Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE OF THE OTTAWA RIVER FROM 1st. of April 1911 to 31st. March 1912 at the following places

	Drainage Areas
Montreal	56,043 Sq. Miles
Besserer's Grove	45,473 " "
Chaudière Falls	34,623 " "
Foot of Coulonge Lake (La Passe)	27,900 " "
Klock's Station	19,880 " "
Foot of Timiskaming Lake	18,100 " "
Quinze River	12,100 " "

S.B. Johnson
Hydraulic Engineer





No. 71—Party metering in winter. Picture shows telephone receiver attached to head of the recorder. Revolutions of the meter wheel are counted in periods of time varying between 40 and 70 seconds.



No. 72—Winter metering in progress on the Rideau river. During high water measurements are made from the G.T.Ry. bridge farther down owing to the flooding of the country for several hundred feet back from the shores.

on the watersheds. Such figures as these can only be secured when there are available records derived from a thorough system of rain gauges and continuous meterings and water surface readings, extending over long periods.

Plate No. 11 shows the annual precipitation for the years 1906, 1909 and 1911, also the average for the number of years that records have been kept at each station. It also shows at a glance the number of years that records have been kept, the distance between each station, and the locality which has the heaviest annual precipitation.

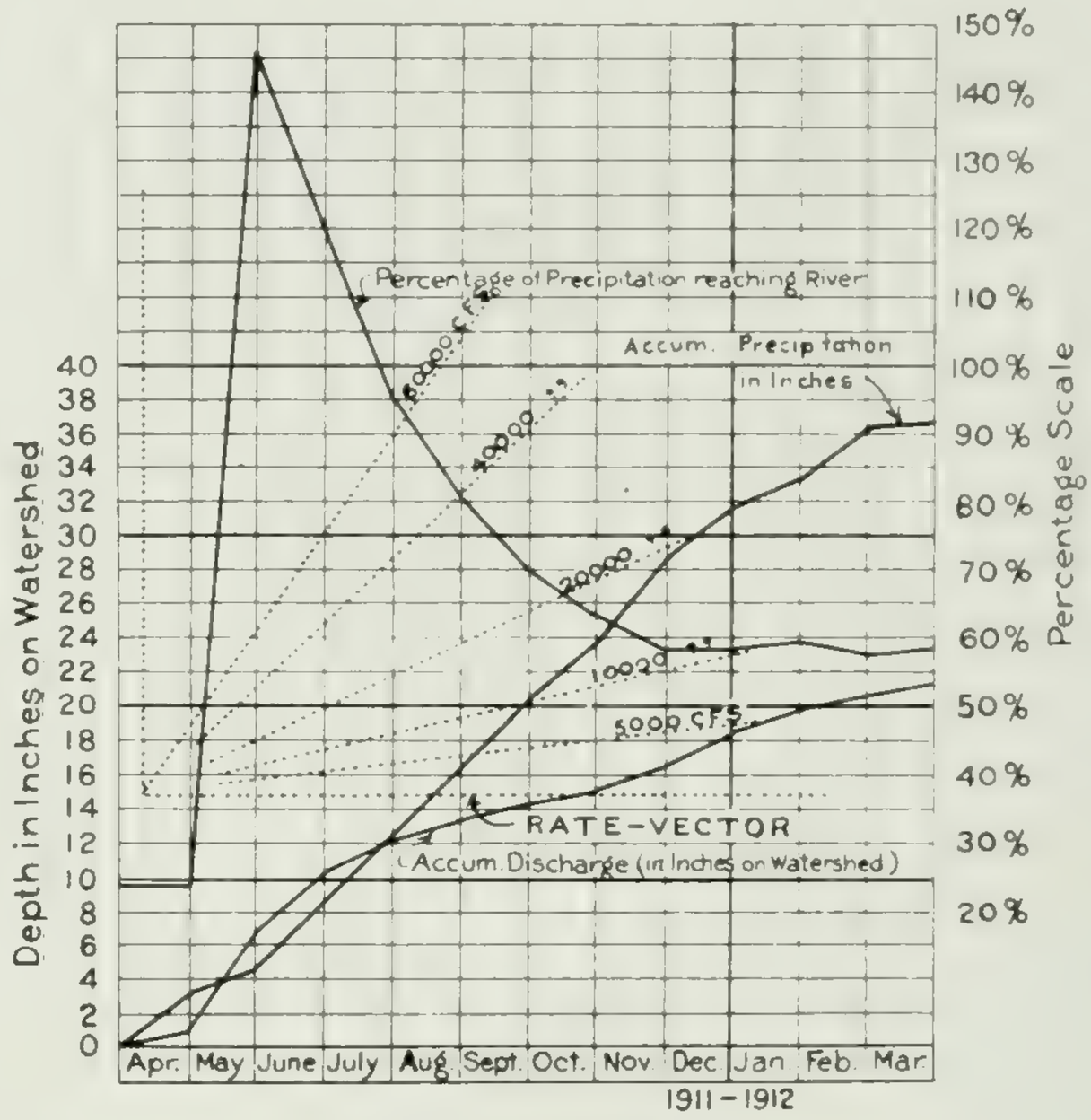
The monthly precipitation in inches compared with the run-off in inches is shown on plate No. 12 for the last 20 years. These are taken from monthly averages of the following stations from Ottawa west, Ottawa city, Renfrew Stone cliffe, Timiskaming, Haileybury and the Quinze.

The following table gives the flow figures for 12 months from the 1st of April, 1911 to 31st March, 1912, at the discharge stations on the Ottawa river, and for the larger tributaries.

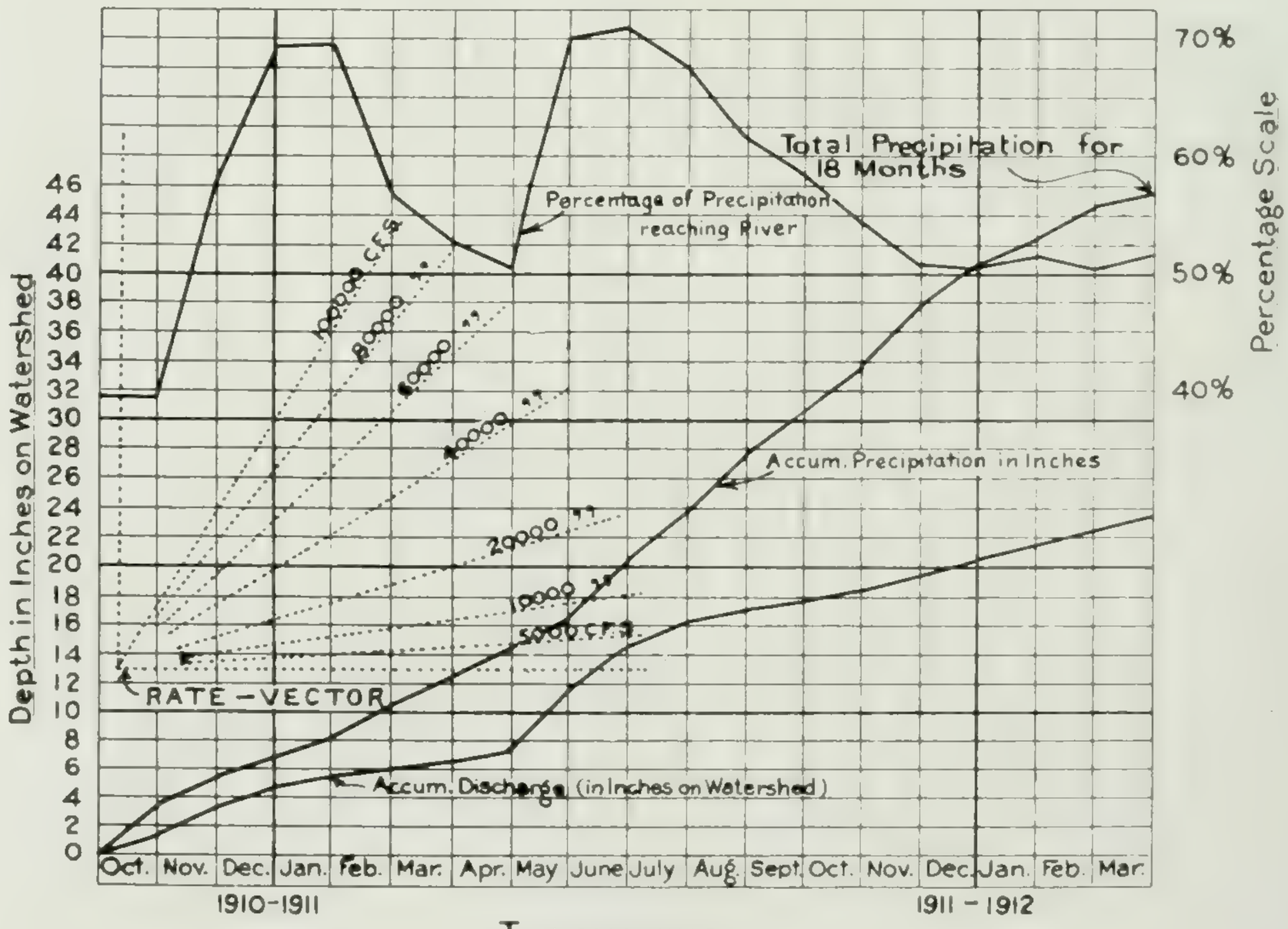
	Discharge C.F.S.		Run-off.			
	Maximum.	Minimum.	Maximum per sq. mile in c.f.s.	Minimum per sq. mile in c.f.s.	Average per sq. mile in c.f.s.	Per cent of rain fall.
Ottawa.						
Quinze	46,500	2,900	5·62	·35	1·55	58·1
Below Timiskaming	90,000	7,300	4·97	·40	1·23	51·5
Below Mattawa	93,700	8,000	4·71	·40	1·23	51·2
At Chaudière	106,000	12,500	3·06	·36	·97	43·3
Below Ottawa	152,800	16,000	3·36	·35	1·01	44·8
Montreal	213,000	20,400	3·91	·37	1·07	44·2
North Tributaries.						
Gordon Creek	1,500	480				
Black	8,100	370	8·52	·39	1·715	
Coulonge	10,240	710	5·63	·39	1·317	
Gatineau	51,200	3,550	5·58	·38	1·315	
Du Lièvre	23,700	1,200	5·86	·29	1·087	
Rouge	28,400	860	15·84	·45	1·664	
South Tributaries.						
Montreal	15.670	980	5·62	·35	2·086	
Petawawa	4,600	260	2·90	·16	·690	
Bonnechère	2,600	30	2·85	·03	·635	
Madawaska	9,200	520	2·86	·16	·672	
South Nation	37,200	20	25·90	·01	·827	

Plate No. 8.

PRECIPITATION, DISCHARGE and PERCENTAGE of RUN-OFF of the OTTAWA RIVER at NORTH TIMISKAMING for 12 Months, and at SOUTH TIMISKAMING for 18 Months.



NORTH TIMISKAMING



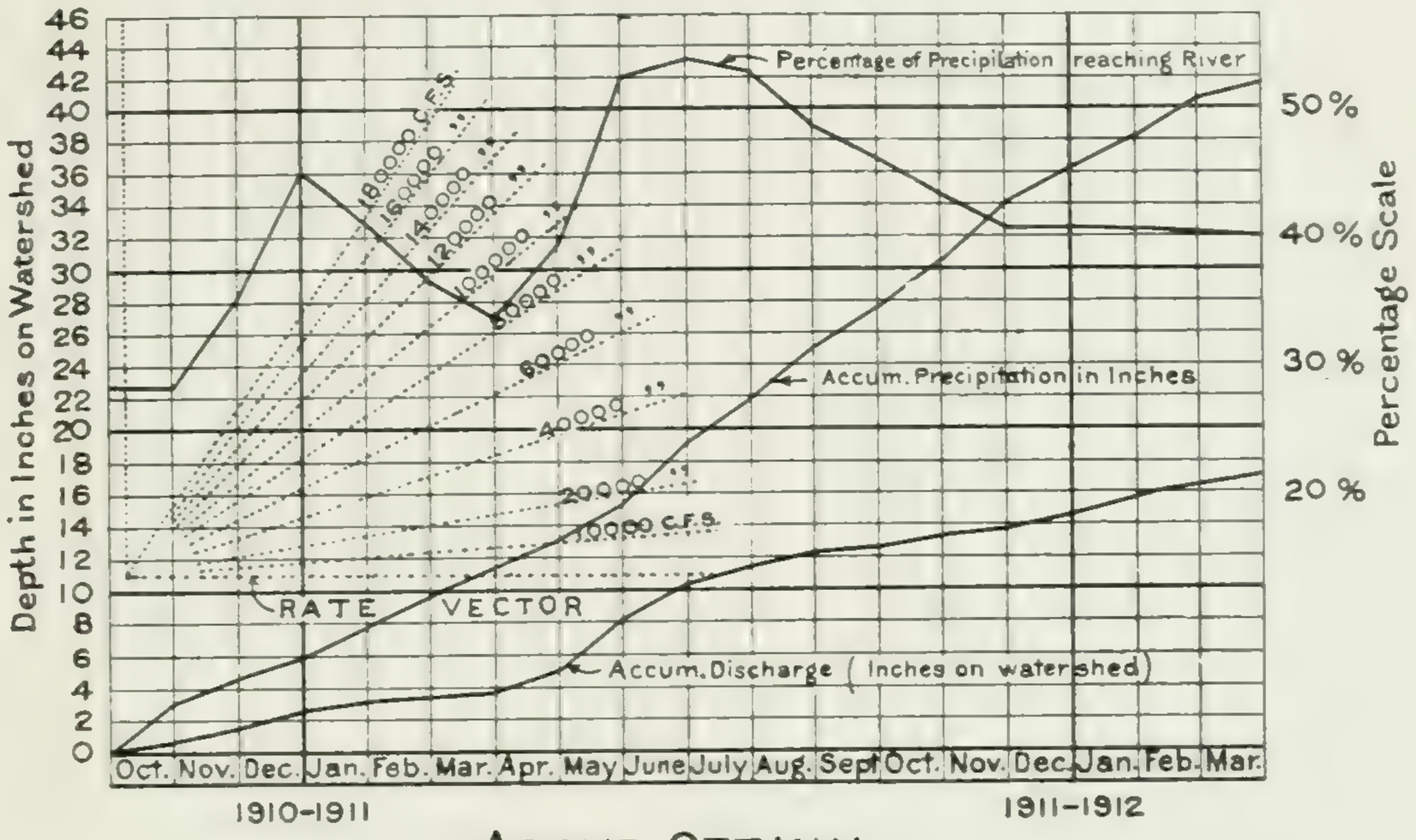
TIMISKAMING

FRM

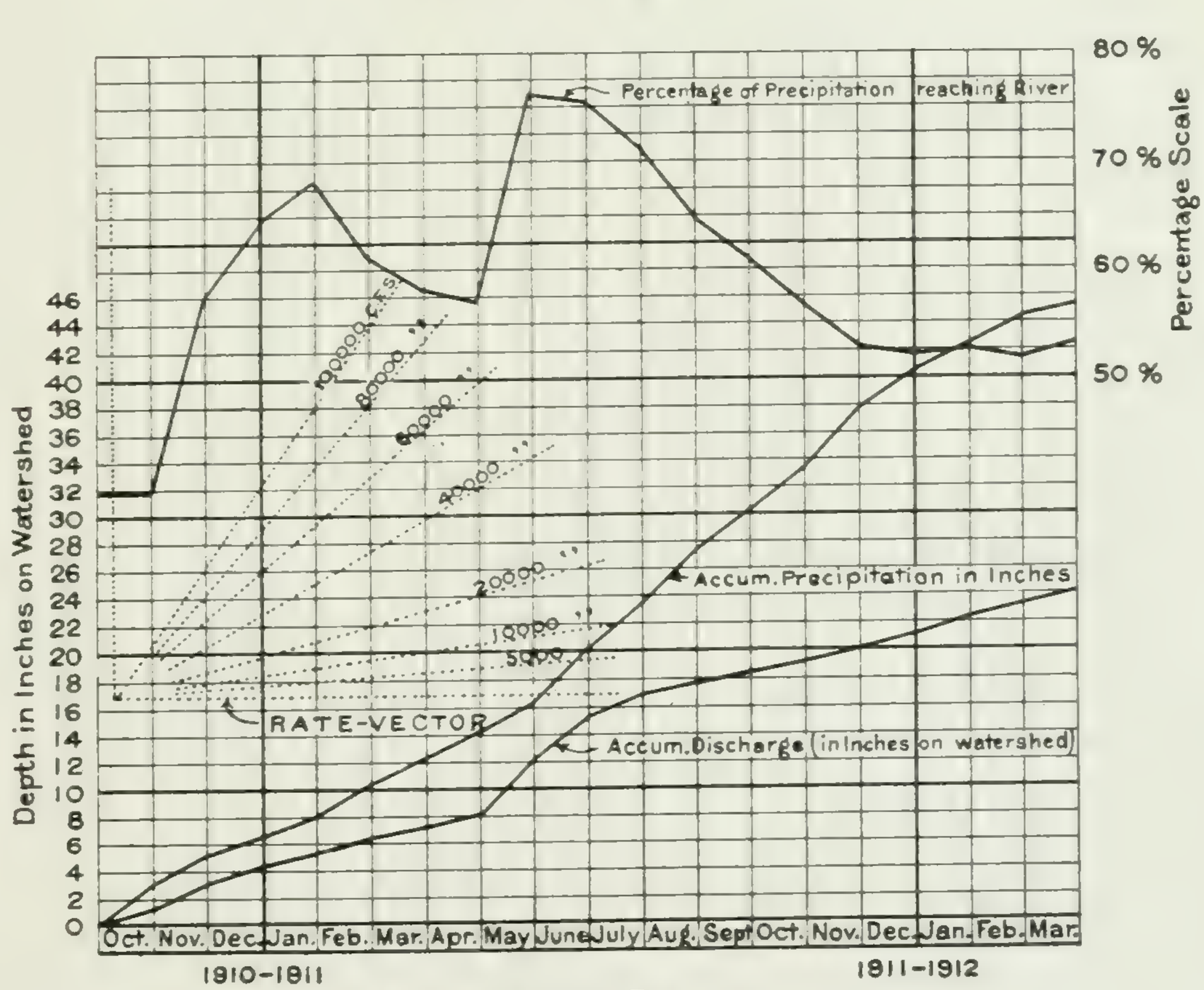
SESSIONAL PAPER No. 19

Plate No. 9.

PRECIPITATION DISCHARGE and PERCENTAGE of RUN-OFF of the OTTAWA RIVER above DEUX RIVIERES and at the CHAUDIERE FALLS OTTAWA, For 18 Months.



ABOVE OTTAWA



ABOVE DEUX RIVIERES

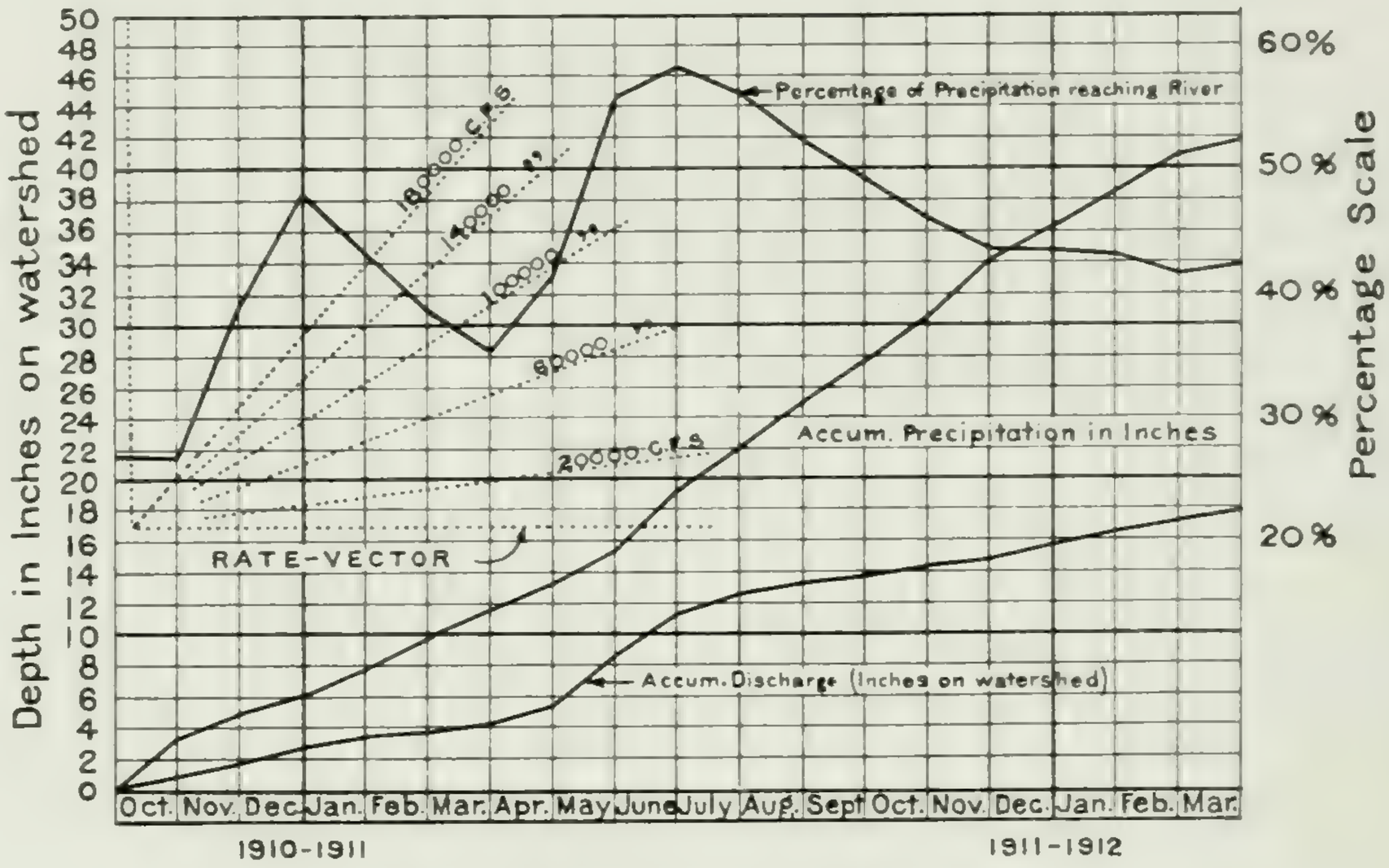
Romeo Brault, del.

Plate No. 10.

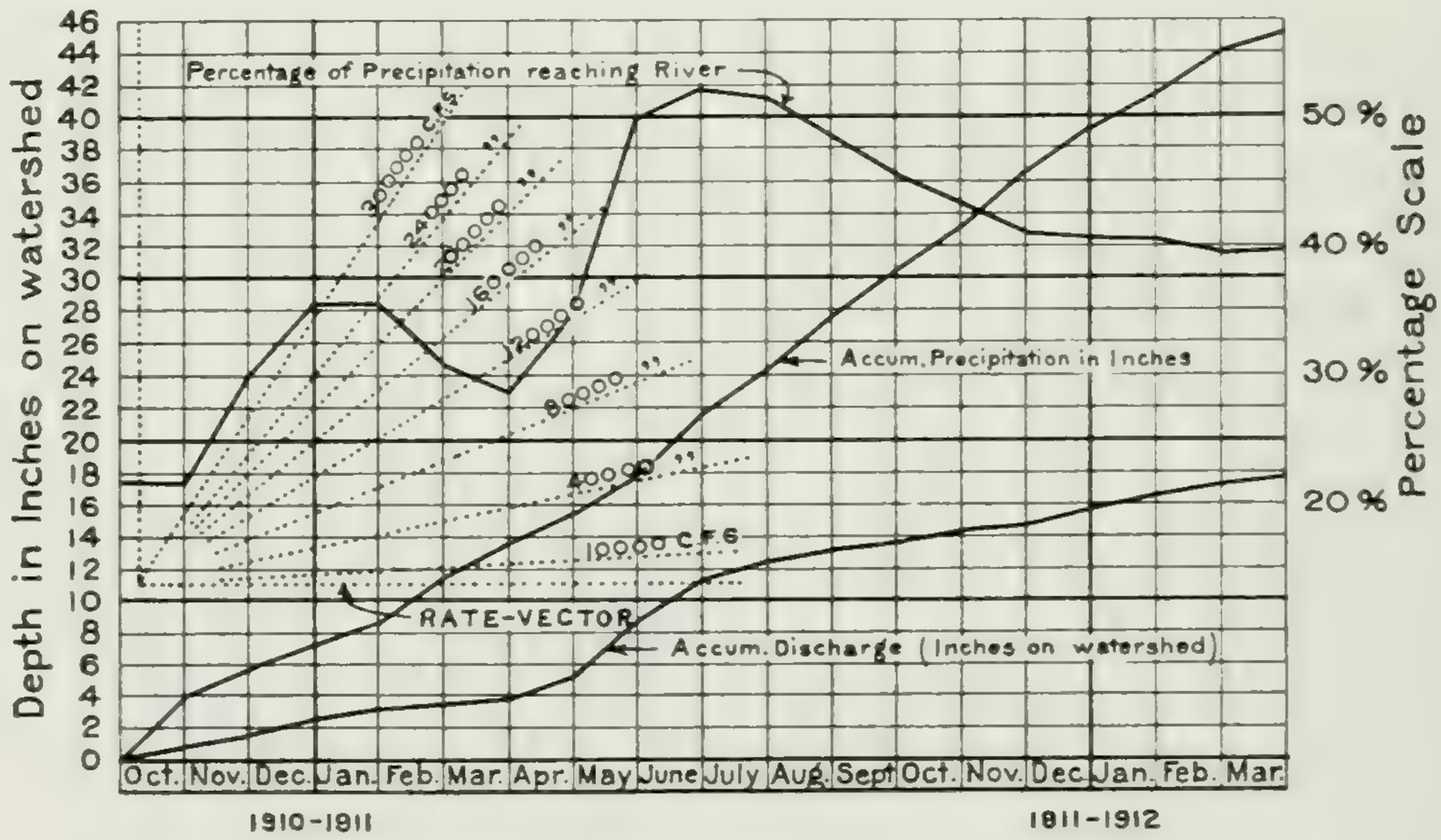
PRECIPITATION DISCHARGE and PERCENTAGE of RUN-OFF

of the OTTAWA RIVER at OTTAWA and MONTREAL, for

18 Months.



OTTAWA (BESSERERS GROVE)



MONTREAL

Romeo Brault, del.

Annual Precipitation at Seven Stations on the OTTAWA VALLEY for 1906, 1909, 1911, and the average for the number of years of record at each place

Precipitation for 1906 —·—·—
" " 1909 —·—·—
" " 1911 ·····
Average precipitation ——●——

Precipitation in inches

42 40 38 36 34 32 30 28 26 24 22 20

Average Precipitation for Years of Record

1909

1911

1906

No Records at Timiskaming 1909

No Records at Timiskaming 1906

36 Years Records

33 Years Records

21 Years Records

31 Years Records

1 Year's Record

18 Years Records

1 Year's Record

MONTREAL — 104 MILES — OTTAWA — 49 MILES — RENFREW — 77 MILES — STONECLIFFE — 68 MILES — TIMISKAMING — 56 MILES — HAILEYBURY — 20 M. — QUINZE

Plate No. 12.

PRECIPITATION & RUN-OFF
IN THE
OTTAWA VALLEY
AT
BESSERERS GROVE
For 20 Years, 1892 to 1911 Inclusive



Romeo Brault, del.



No. 73—Log slide on Montreal river, showing high banks of Timiskaming lake in the distance.



No. 74—Part of gorge on the Montreal river.



No. 75—Klock station, Ontario. Showing position of high water gauge, and bench mark on boulder.

The following is a list of the rivers on which gauges are placed, giving their locality, the names and addresses of the observers and the elevation of the zeros above mean sea level at New York.

Daily readings from the Ottawa and St. Lawrence river canals are supplied us through the courtesy of Mr. Ernest Marceau, Superintending Engineer Quebec canals.

Gauge No.	River.	Situation of Gauge.	Zero Elevation above M.S.L.	Gauge Reader.	Gauge Reader's Address.
1	Quinze	Douglas Farm	852·15	A. Carr	North Timiskaming, Que.
2	Quinze	Foot of Maple Rapids	819·63	Wm. Tomney	" "
3	Ottawa	Haileybury	577·96	F. J. Fitzgerald	Haileybury, Ont.
4	Montreal	Empire Mill	890·91	J. A. Tapley	Latchford, Ont..
5	Montreal	Bay Lake	872·91	J. A. Tapley	"
6	Kipawa Lake	Kipawa	869·50	Shannon & Fraser	Kipawa, Que.
7	Ottawa	Timiskaming Wharf	569·60	A. T. O'Neil	Timiskaming, Que.
8	Ottawa	" below dam	569·10	"	"
9	Gordon Creek	Lumsden's Mills	768·73	Jas. Kerr	Lumsden's Mills.
10	Lake Nipissing	North Bay	635·00 (H.W.)	Claude Laws	North Bay, Ont.
11	Ottawa	Rosemount, Mattawa	492·78 (L.W.) 488·78 (H.W.)	D. Loughrin	Mattawa, Ont.
12	Ottawa	Klocks Station	483·28 (L.W.) 474·89	A. Savard	Klock.
13	Petawawa	Above C.P.R. bridge	435·61	J. H. Dixon	Petawawa, Ont.
14	Ottawa	Pembroke	361·88	W. L. Murphy	Pembroke, Ont.
15	Black	Waltham		Nap. E. Rochon	Waltham, Que.
16	Coulonge	Coulonge Chute		Camille Germain	Leclaire, Que.
17	Ottawa	La Passe	341·55	G. Gervais, Sr.	La Passe, Ont.
18	Bonnechère	Renfrew	317·38 H.W.)		
19	Madawaska	Calabogie Lake	502·47 (L.W.) 499·47	John Drysdale	Calabogie, Ont.
20	Madawaska	Claybank Bridge	255·21	N. Jaundraw	Claybank, Ont.
21	Ottawa	Lake Deschènes	187·47	John Sparks	Britannia Bay, Ont.
22	Rideau	Black Rapids		G. E. Armstrong	Black Rapids, Ont
23	Rideau	Black Rapids		"	"
24	Ottawa	Rideau Locks	122·47	W. H. Bishop	Ottawa, Ont.
25	Gatineau	Bark Lake	1181·03	A. B. Taylor	Bark Lake Depot.
26	Gatineau	Chelsea, No. 3	235·28	Jas. Hyde	Chelsea, Que.
27	Gatineau	Chelsea, No. 2	203·50	"	"
28	Du Lièvre	Poupore, Upper	433·40	O. Laframboise	Poupore, Que.
29	Du Lièvre	Poupore, Lower	423·40	"	"
30	South Nation	Plantagenet Springs	170·20	N. J. Sibley	Plantagenet, Ont.
31	Rouge	Table Falls	356·00	S. D. Goudie	Calumet, Que.
32	Ottawa	Grenville, Upper sill	117·35	T. N. Williamson	Grenville, Que.
33	Ottawa	Grenville, Lower sill	71·80	G. Bradford	Greece's Point, Que.
34	Ottawa	Carillon Lock, No. 2	74·00	T. Filion	Carillon, Que.
35	Ottawa	Carillon Lock, No. 1	58·70	John Webster	"
36	Ottawa	Ste. Annes Upper	59·90	David Robillard	Ste. Annes, Que.
37	Ottawa	St. Annes Lower	57·80	"	"
38	St. Lawrence	Upper Soulanges	135·25	A. C. St. Amour	Coteau, Que.
39	St. Lawrence	Rouge River Wharf	125·95	J. Leger	Coteau du Lac, Que.
40	St. Lawrence	Cedars Village	119·09	E. Bissonnette	Cedars., Que.
41	St. Lawrence	L.H. & P. Power House	85·69	Frank Marier	"
42	St. Lawrence	Dumesnils House	90·36	Ulric Leroux	"
43	St. Lawrence	Lower Soulanges	51·50	A. C. St. Amour	Cascades Point, Que.
44	St. Lawrence	Upper Lachine Lock No. 5	52·00	J. Enright	292 Wellington St., Montreal.
45	St. Lawrence	Lower Lachine Lock No. 1	5·69	R. Milloy	" "
46	St. Lawrence	Lanoraie	12·47	Octave Goulet	Lanoraie...
47	St. Lawrence	Sorel	17·92 on gauge-sea level.	E. B. Cardin	Sorel.

The following gauges have been calibrated and will give the flow for any water surface elevation during the open water season, Nos. 1, 4, 8, 9, 12, 13, 15, 16, 17, 18, 20, 21, 24, 27, 29, 30, 31, 34, 38, 45, 46, and 47, see list on page 106.

Gauge No. 1 on Quinze lake cannot be used to arrive at the discharge after construction starts on the new dam at the head of the Maple rapids for the reasons already given. The elevation at the foot of the Maples, however, will be controlled entirely by the flow passing through the sluices. The discharge rating table will then be related to gauge No. 2.

The water surface elevation at gauge No. 4 on the Montreal river is occasionally affected by log jams a short distance below the mill. As records have not always been kept when these conditions occurred the flow may be slightly large for a few days at a time. The discharge rating table however, is sufficiently accurate for the greater part of the summer when the channel is clear.

Gauge No. 8 below the Timiskaming dams is rated to give the flow from Lake Timiskaming and Gordon creek, thus taking in the combined flow from Timiskaming and Kipawa lakes and the run-off from 18,100 square miles of almost entirely wooded country.

Gauge No. 12 at Klock station, 9 miles below Mattawa is, outside of Besserer's Grove, the best rated station on the Ottawa river, it is only applicable for open water conditions and when the rapids immediately below are free from logs.

Gauge No. 13 is situated on the Petawawa river just above Third Chute and is calibrated from meterings taken at different stretches of the river. It is in swiftly running water at the head of the rapids, where ice does not form.

Gauge No. 15 situated on the Black river at Waltham gives the discharge for that river from meterings taken at the gauge site. Only 4 meter measurements have been made of this river, therefore the daily discharge shown on plate No. 16 can only be considered approximate. Levels have not yet been run up this river to the gauge, which is only a mile above the C.P.R. station.

Coulonge river gauge (No. 16) is situated immediately above Coulonge chute, it has only been partially rated, more measurements are required, particularly at high water. About 7 miles of levels would be necessary to connect the gauge site with a mean sea level bench mark.

Gauge No. 18 on the Bonnechère river at Renfrew is only applicable for high water conditions. The river runs very low late in the summer, hence the Power people have to depend on daily storage in the pond above the gage site to keep the turbines running. The dam at the power house leaks badly, therefore weir measurements were not possible. The low water flow was estimated by taking the run off per square mile from neighbouring rivers.

The Madawaska river discharge rating station is situated at Claybank Bridge. Meterings are made from a boat, at an excellent site just above the bridge and daily readings are taken from gauge No. 20 about 1,500 ft. below the bridge. The station has been well rated and gives good results both in winter and summer.

The daily flow over the Chaudière falls at Ottawa city is estimated from gage readings at the foot of Deschènes lake, gauge No. 21. Meterings are made usually above the C.P.R. bridge, plate No. 20 gives the location of the three channels metered. This metering station is the only one suitable for low water measurements between the Chaudière and Chats falls. Storage has to be reckoned with to a small extent during the noon hour and to a greater extent after 6 p.m. owing to the mills closing down, the quantity stored must therefore be deducted from the measurements. Probably the best channel during medium and high water stages is at the first narrows below Quyon, the current however is too slow for accurate work during low water, the average for the whole channel not being over 7 or 8 tenths of a foot per second

The condition of the river from Deschènes lake down to the Little Chaudière rapids makes it entirely unsuitable for metering. The bed of the river opposite the site of Skead's old mill which is at the straightest and narrowest section where current meter work is at all possible, is particularly bad, old piers and sunken logs forming a good part of the bottom. The surface also is cut up with booms and piers and is never clear from logs. For these reasons this metering station was abandoned for the more suitable channels mentioned above. Thus it is seen that metering possibilities are not ideal above the Chaudière.

Over thirty meterings have been made of the Gatineau river at different points, chiefly below Chelsea. The regular summer metering station is at Ironsides, four miles from the mouth, and in winter at the head of Eaton chute, nine miles up. Below Chelsea during the winter season the river is usually choked with ice down to its confluence with the Ottawa.

The current meter measurements are referred to readings on gauge No. 27 at Chelsea. Daily readings have been taken at this place since December, 1899, these were published in the 1909 and 1910 report.

The flow below Ottawa city is measured at Besserer's Grove, now called Hiawatha Park. Three meterings were made during last winter and are shown on the list of discharge measurements. From these a winter curve has been plotted by referring the meterings to the Rideau Locks gauge, numbered 24. on the list of gauges. The discharge rating table under ice conditions is listed with the other tables, and the curve is shown on Plate No. 25, which is reprinted from last year's report with this addition.

Gauge No. 29, on the DuLièvre river, is at the foot of Poupore Lock. This reach has been partially rated as described by Mr. Anderson in last year's report. Only two meterings were made during the summer of 1911, but these show practically unchanged channel conditions below the gauge.

Four additional meterings were made during the year of the South Nation river. These were made from the regular station at the bridge at Plantagenet Springs. They show the remarkable variation in flow of from 37,000 cubic feet per second down to 20 inside of five months, and a difference in the water surface elevation at the gauge of seven feet. During high water the velocity averages 5½ feet per second, with a maximum speed of over seven feet per second, about the limit at which it is safe to meter.

Almost the entire watershed of this river, comprising 1,436 square miles, is settled and drained and is devoid of lakes. This great extent of drained country and consequent deficiency in swamp area is in all probability the cause of the quick run-off in the spring and the extremely low flow in the summer.

Gauge No. 31 is situated on the Rouge river immediately above Table falls at Rosses' electric power plant. Only one metering was made during the year; this showed, as far as a single metering can, that river-bed conditions at the gauge site had not materially changed. The watershed is still well wooded and abounds in lakes and swamps.

Next to the South Nation river, the Rouge yields the greatest maximum run-off per square mile of any of our tributaries, but unlike the former river, the minimum run-off is also large.

For the discharge curve of the Ottawa river at its mouth it was found that the readings on the Upper Carillon gauge (No. 34) gave the best results. The water surface elevation on the gauges at the foot of the Carillon canal and at the head of St. Annes are largely affected by winds on the lake of the Two Mountains, they therefore could not always be relied on as flow factors.

There was not a sufficient number of meterings made on the St. Lawrence river to plot anything but very approximate discharge curves. Measurements are being carried on at the Cedars at Valleyfield and at several points below Montreal; from these meterings discharge curves will be plotted giving the flow and



No. 76—Looking up the Black river from the Waltham bridge.



No. 77—River drivers guiding logs into timber slide.



No. 78—View showing head of High Falls, Black river, with dam and highway bridge in the distance.

Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE OF THE

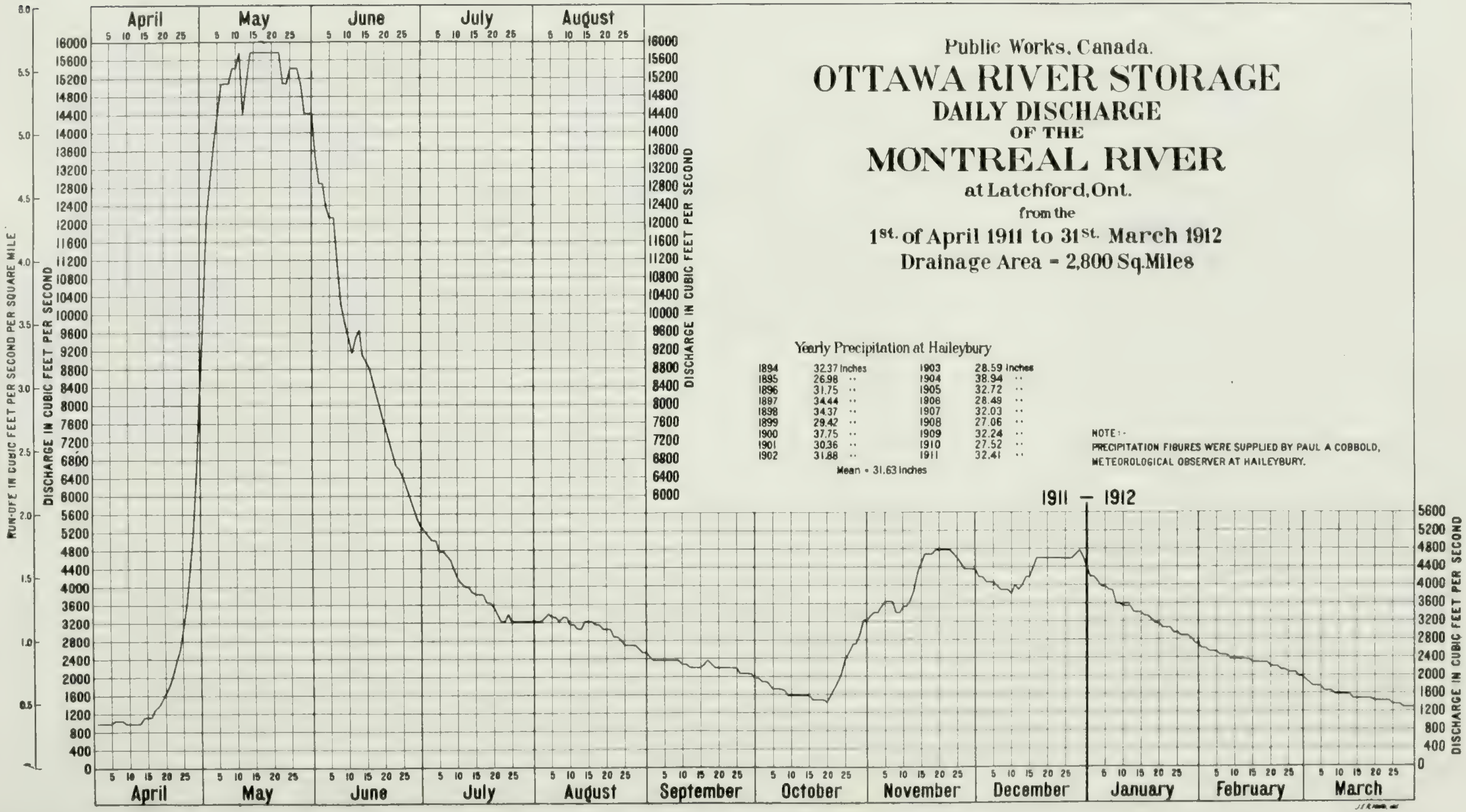
MONTREAL RIVER

at Latchford, Ont.

from the

1st. of April 1911 to 31st. March 1912

Drainage Area = 2,800 Sq. Miles



Yearly Precipitation at Haileybury

1894	32.37	Inches	1903	28.59	Inches
1895	26.98	"	1904	38.94	"
1896	31.75	"	1905	32.72	"
1897	34.44	"	1906	28.49	"
1898	34.37	"	1907	32.03	"
1899	29.42	"	1908	27.06	"
1900	37.75	"	1909	32.24	"
1901	30.36	"	1910	27.52	"
1902	31.88	"	1911	32.41	"

Mean = 31.63 Inches

NOTE:-
PRECIPITATION FIGURES WERE SUPPLIED BY PAUL A COBBOLD, METEOROLOGICAL OBSERVER AT HAILEYBURY.

DAILY DISCHARGE OF GORDON CREEK

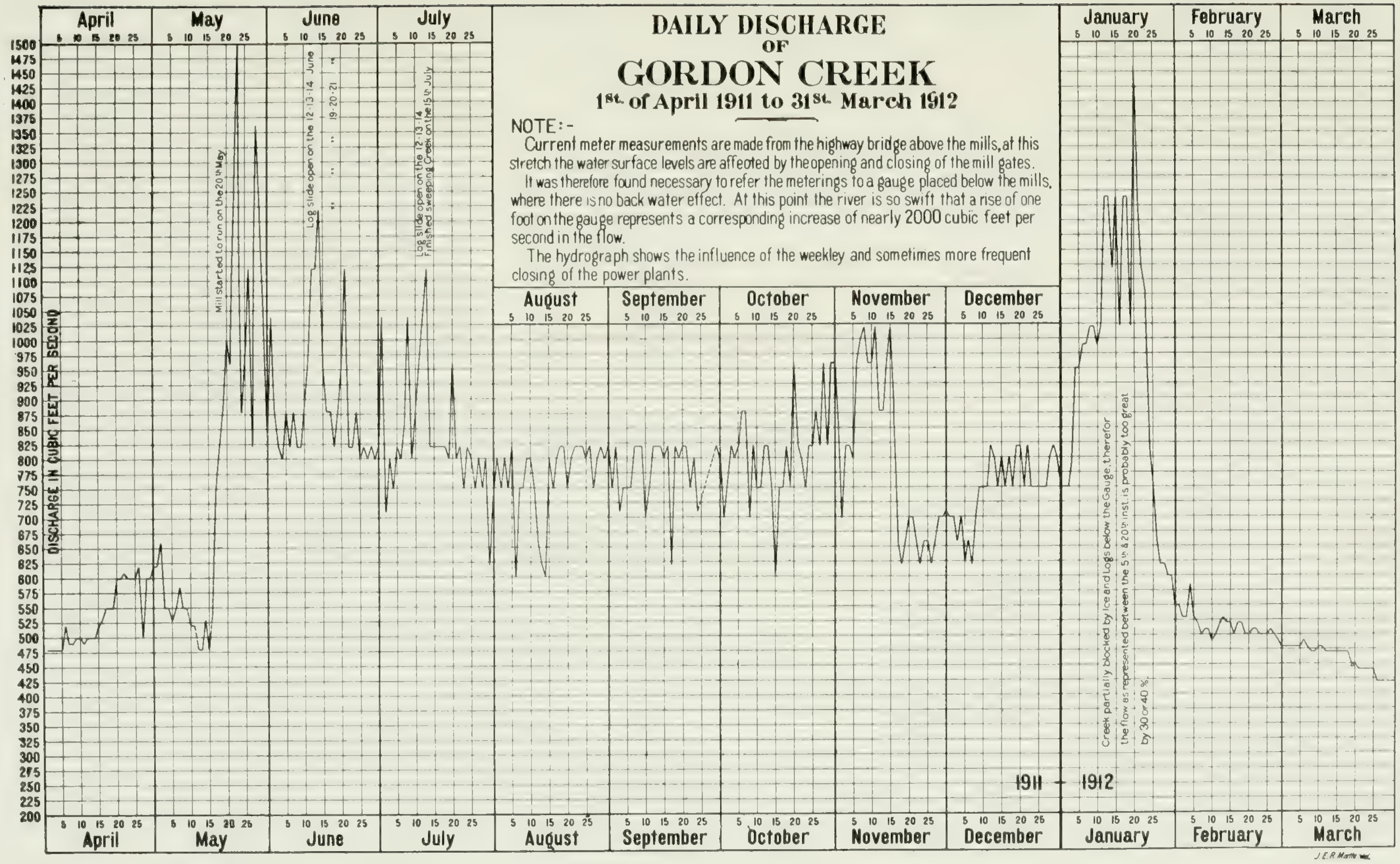
1st. of April 1911 to 31st. March 1912

NOTE:-

Current meter measurements are made from the highway bridge above the mills, at this stretch the water surface levels are affected by the opening and closing of the mill gates.

It was therefore found necessary to refer the meterings to a gauge placed below the mills, where there is no back water effect. At this point the river is so swift that a rise of one foot on the gauge represents a corresponding increase of nearly 2000 cubic feet per second in the flow.

The hydrograph shows the influence of the weekley and sometimes more frequent closing of the power plants.



J.E.R. Marth

Plate No. 15.

Public Works, Canada

OTTAWA RIVER STORAGE

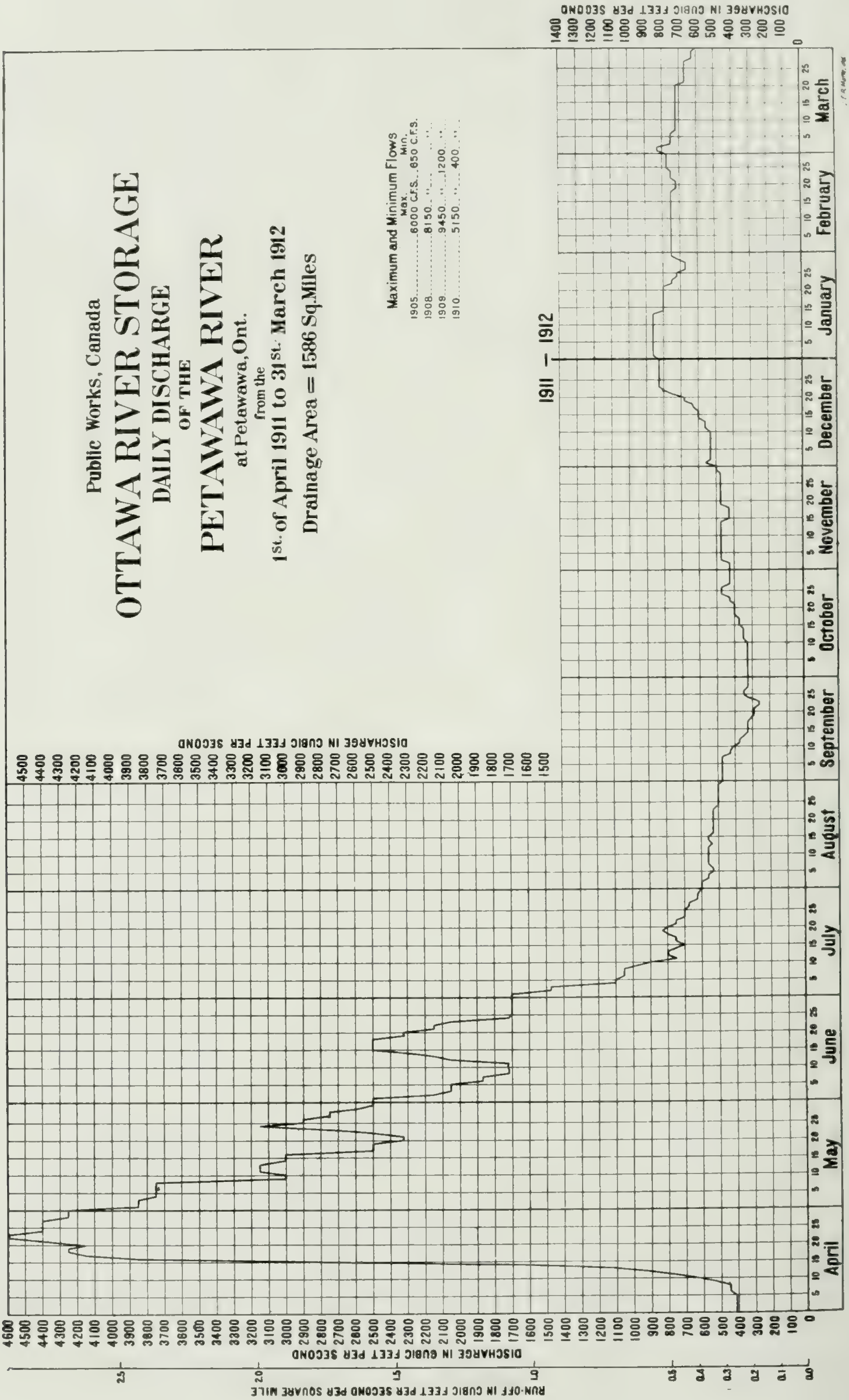
DAILY DISCHARGE OF THE PETAWAWA RIVER

at Petawawa, Ont.
from the
1st. of April 1911 to 31st. March 1912

Drainage Area = 1586 Sq. Miles

Maximum and Minimum Flows

	Max.	Min.
1905	6000 C.F.S.	650 C.F.S.
1908	8150 "	1200 "
1909	9450 "	400 "
1910	5150 "	650 "



Public Works, Canada.

OTTAWA RIVER STORAGE

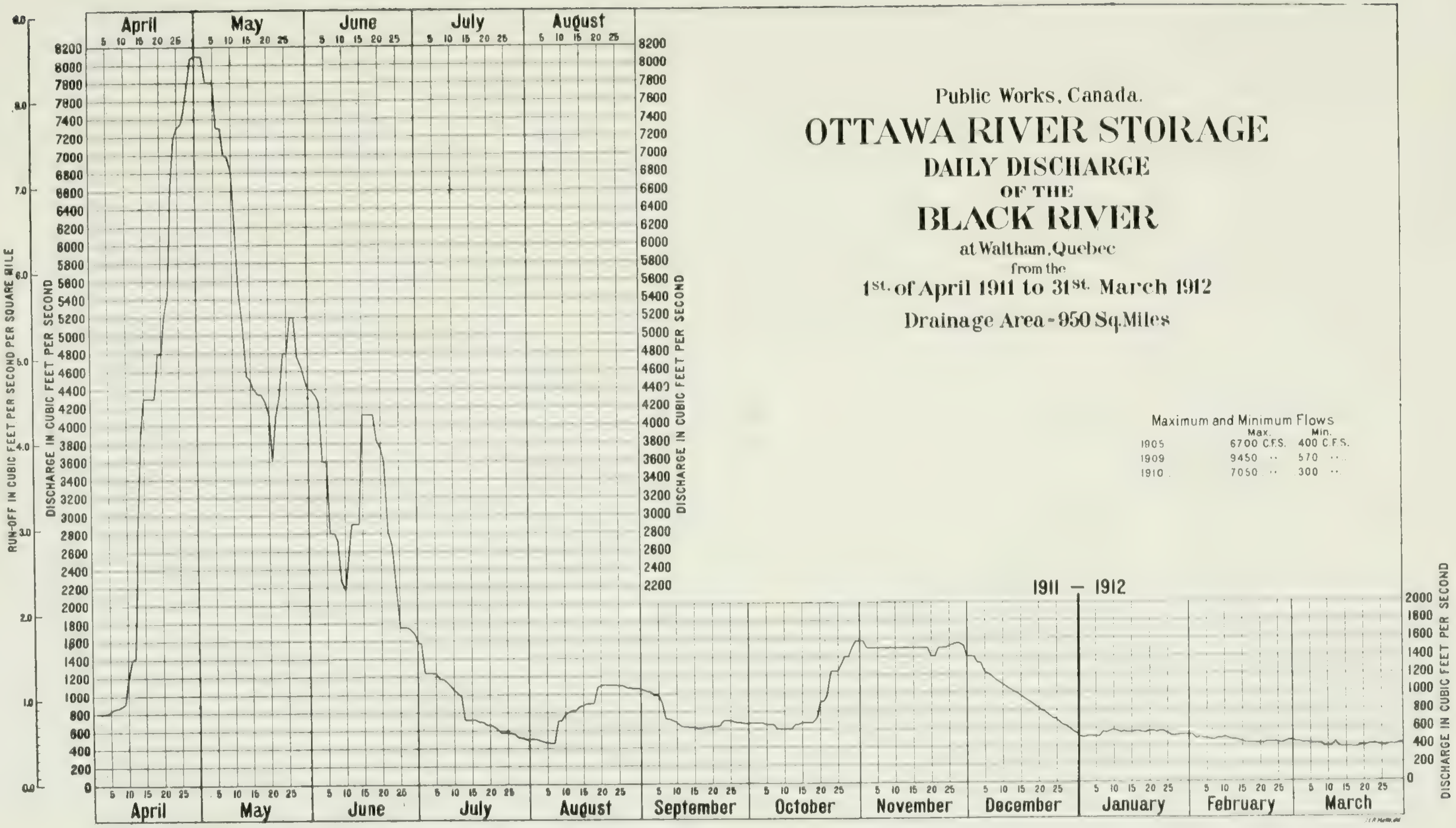
DAILY DISCHARGE OF THE BLACK RIVER

at Waltham, Quebec

from the

1st. of April 1911 to 31st. March 1912

Drainage Area - 950 Sq. Miles



Maximum and Minimum Flows

	Max.	Min.
1905	6700 C.F.S.	400 C.F.S.
1909	9450 "	570 "
1910	7050 "	300 "

Plate No. 17.

Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE OF THE COULONGE RIVER

at Coulonge Chute, Quebec.

from the

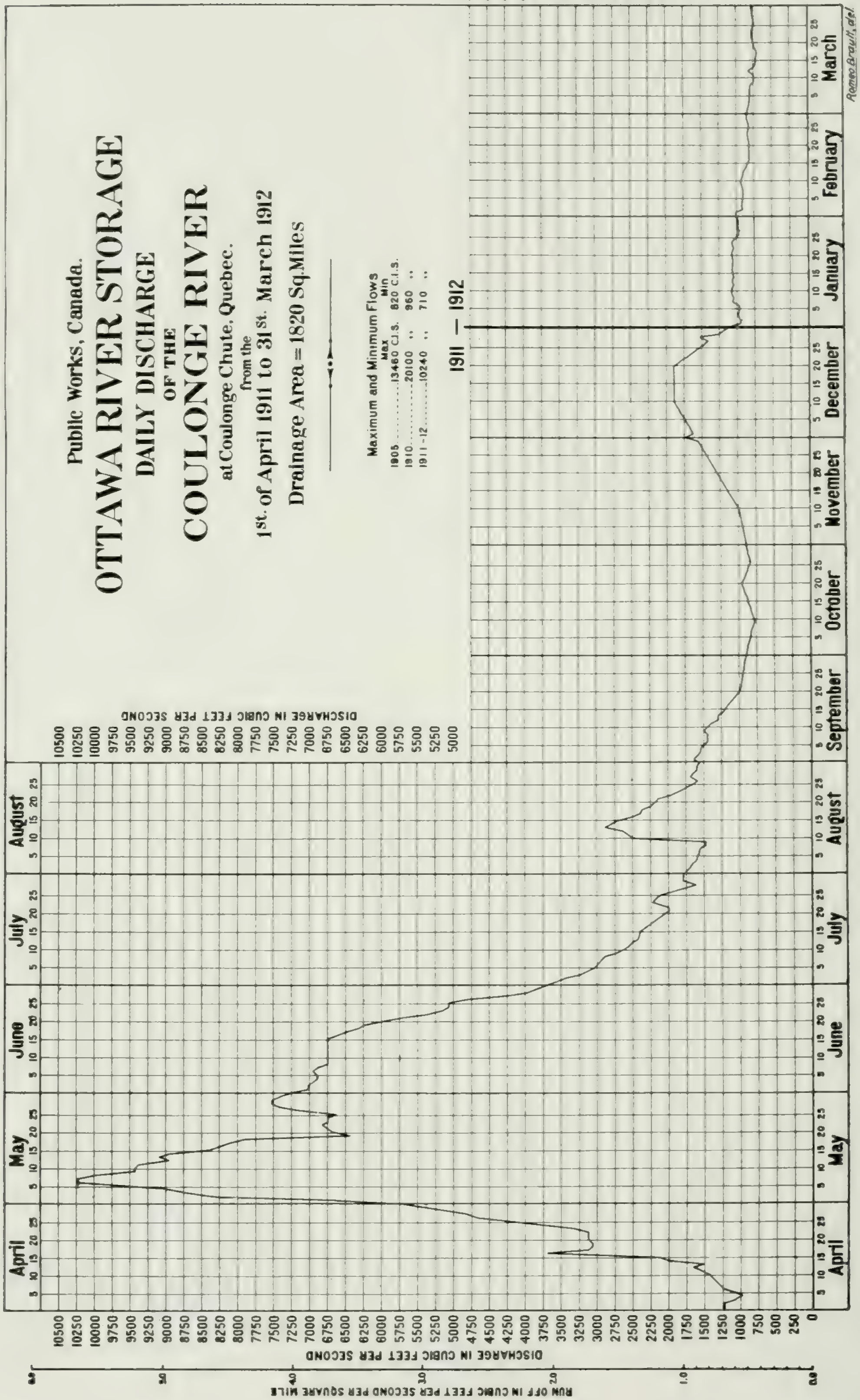
1st. of April 1911 to 31st. March 1912

Drainage Area = 1820 Sq.Miles

Maximum and Minimum Flows

	Max	Min
1905	13460 C.I.S.	820 C.I.S.
1910	20100 "	960 "
1911-12	10240 "	710 "

1911 — 1912



Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE OF THE

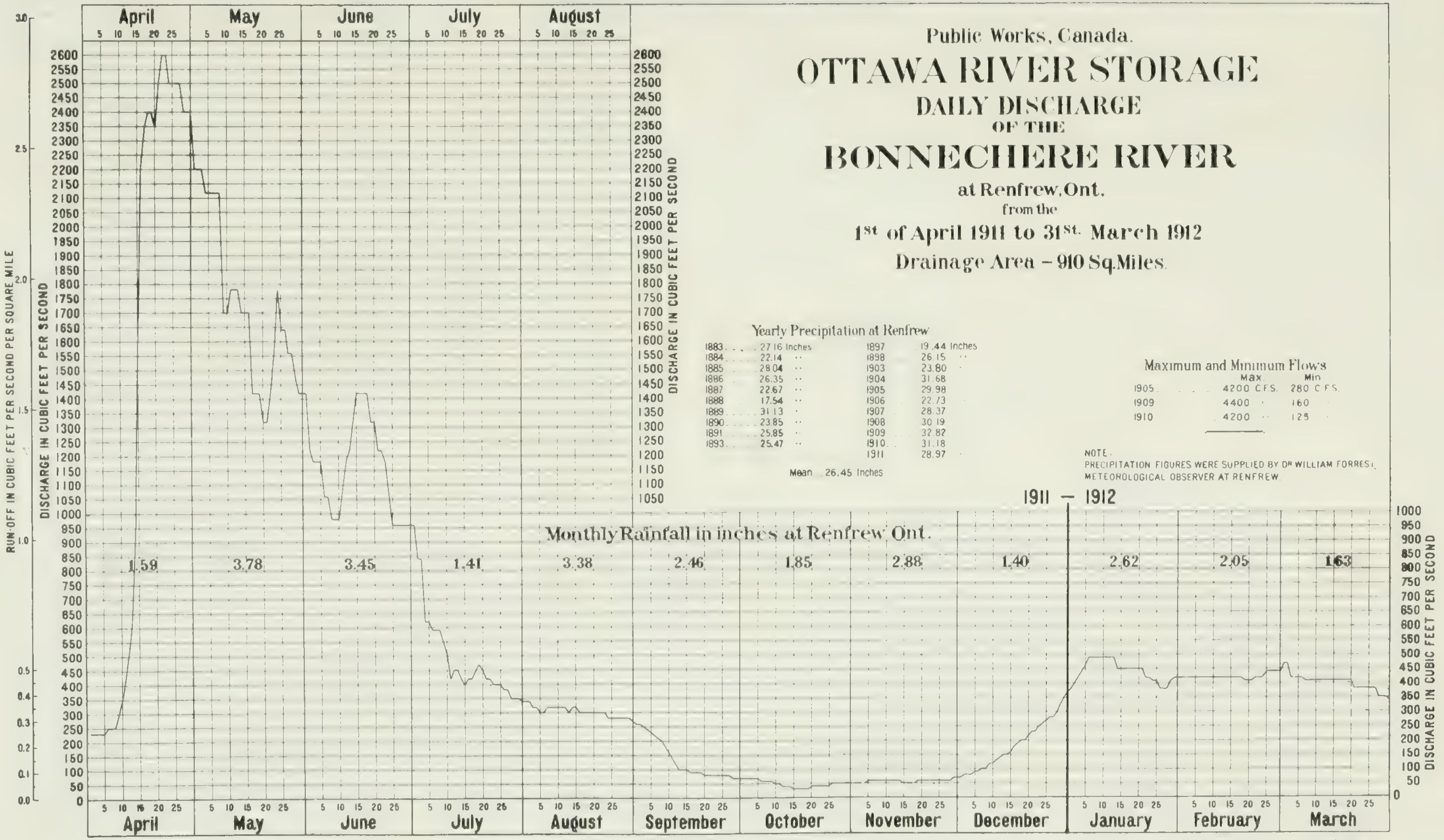
BONNECHERE RIVER

at Renfrew, Ont.

from the

1st of April 1911 to 31st March 1912

Drainage Area – 910 Sq. Miles.



Yearly Precipitation at Renfrew

1883	27.16 Inches	1897	19.44 Inches
1884	22.14 "	1898	26.15 "
1885	28.04 "	1903	23.80 "
1886	26.35 "	1904	31.68
1887	22.67 "	1905	29.98
1888	17.54 "	1906	22.73 "
1889	31.13 "	1907	28.37
1890	23.85 "	1908	30.19
1891	25.85 "	1909	32.82
1893	25.47 "	1910	31.18
		1911	28.97 "

Mean 26.45 Inches

Maximum and Minimum Flows

	Max.	Min.
1905	4200 C.F.S.	280 C.F.S.
1909	4400 "	160 "
1910	4200 "	125 "

NOTE.
PRECIPITATION FIGURES WERE SUPPLIED BY DR WILLIAM FORREST, METEOROLOGICAL OBSERVER AT RENFREW.

Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE OF THE MADAWASKA RIVER

at Clay Bank Bridge, Ont.

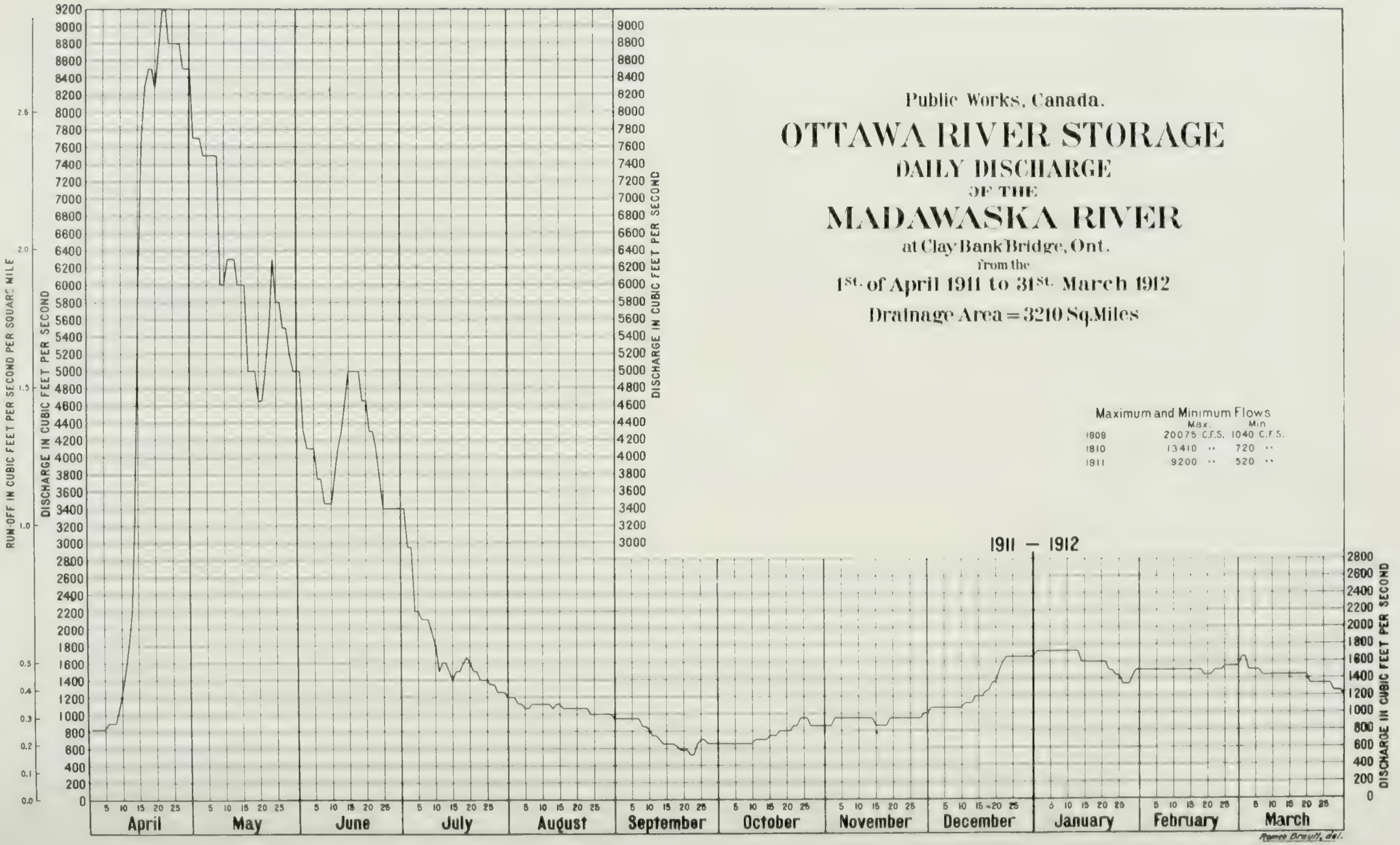
from the

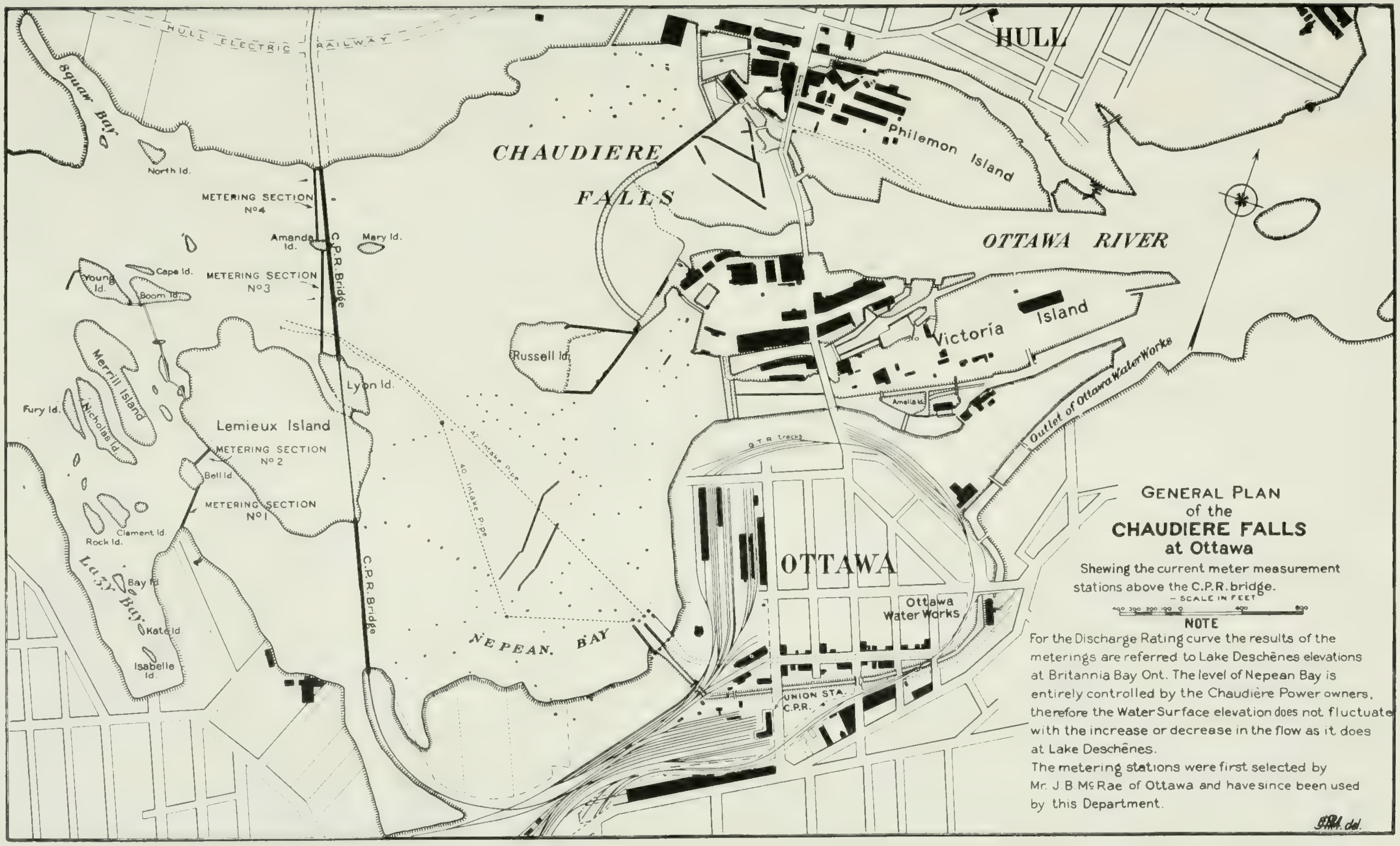
1st. of April 1911 to 31st. March 1912

Drainage Area = 3210 Sq. Miles

Maximum and Minimum Flows

	Max.	Min
1909	20075 C.F.S.	1040 C.F.S.
1910	13410 "	720 "
1911	9200 "	520 "





GENERAL PLAN of the CHAUDIERE FALLS at Ottawa

Shewing the current meter measurement stations above the C.P.R. bridge.

– SCALE IN FEET

NOTE

For the Discharge Rating curve the results of the meterings are referred to Lake Deschênes elevations at Britannia Bay Ont. The level of Nepean Bay is entirely controlled by the Chaudière Power owners, therefore the Water Surface elevation does not fluctuate with the increase or decrease in the flow as it does at Lake Deschênes.

The metering stations were first selected by Mr. J. B. McRae of Ottawa and have since been used by this Department.

Plate No. 21.

Romeo Brault del.

OTTAWA RIVER

Current Meter Measurement

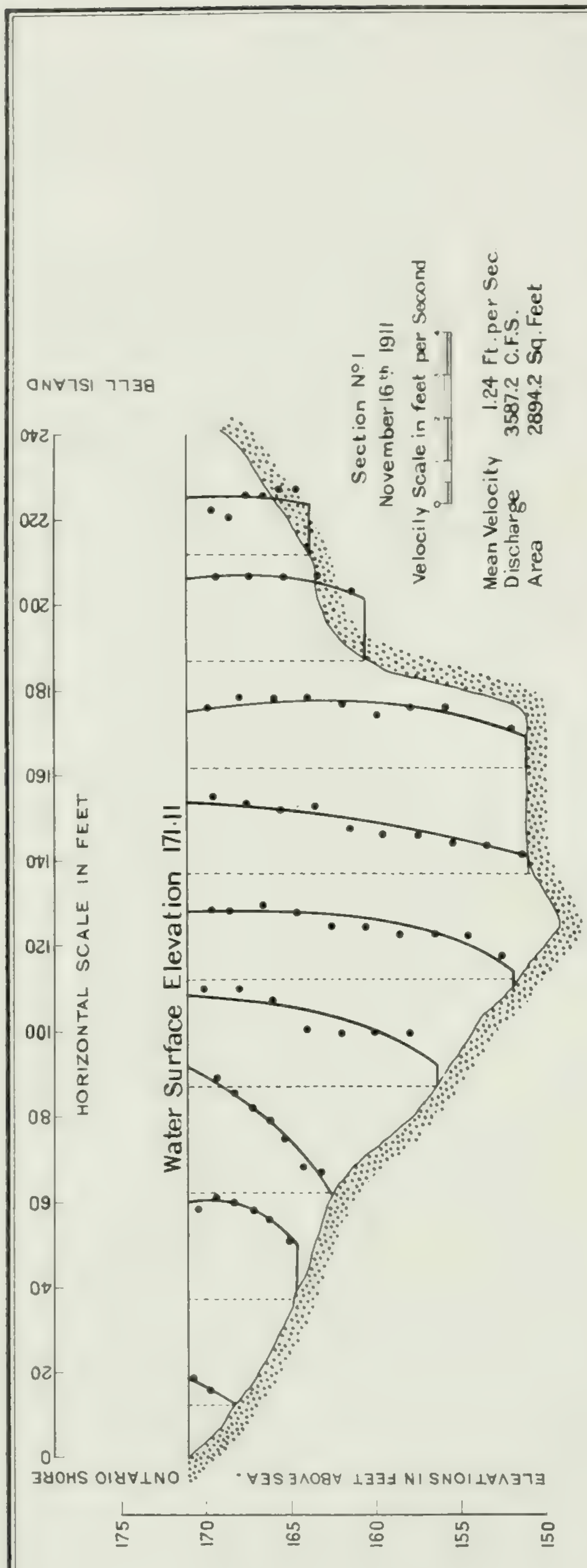
above

Chaudiere Falls

Section N° 2
November 17th 1911

Velocity Scale in feet per Second
0 1 2 3 4

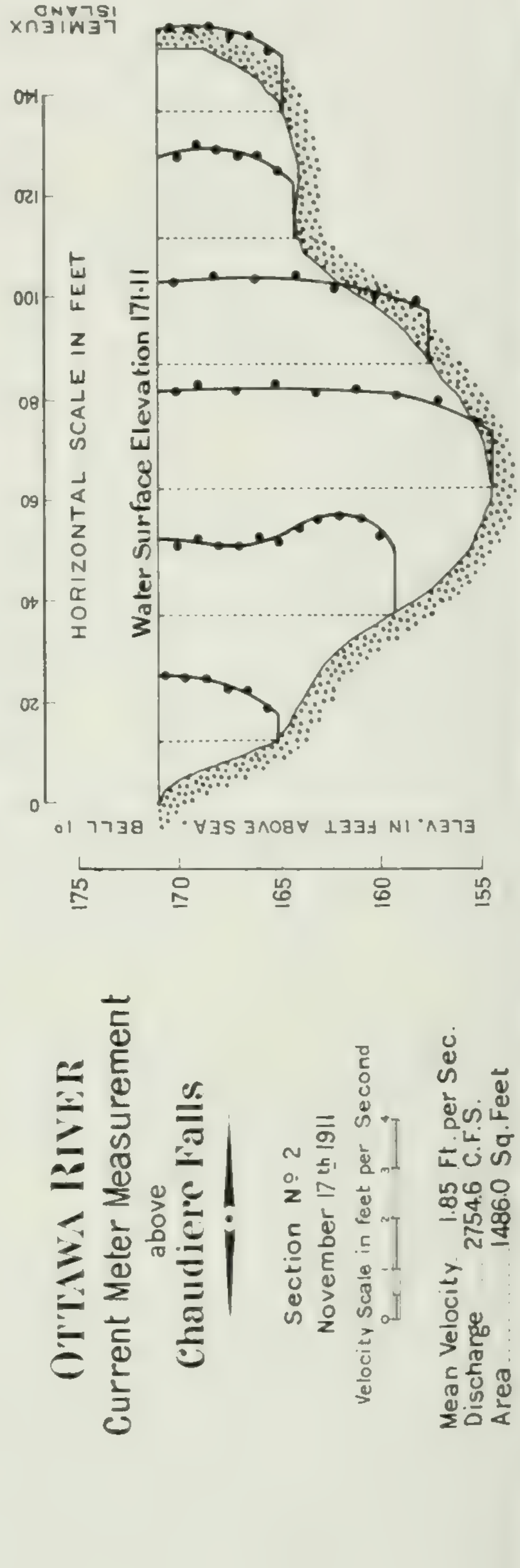
Mean Velocity 1.85 Ft. per Sec.
Discharge 2754.6 C.F.S.
Area 1486.0 Sq. Feet



Section N° 1
November 16th 1911

Velocity Scale in feet per Second
0 1 2 3 4

Mean Velocity 1.24 Ft. per Sec.
Discharge 3587.2 C.F.S.
Area 2894.2 Sq. Feet



SESSIONAL PAPER No. 19

Plate No. 22.

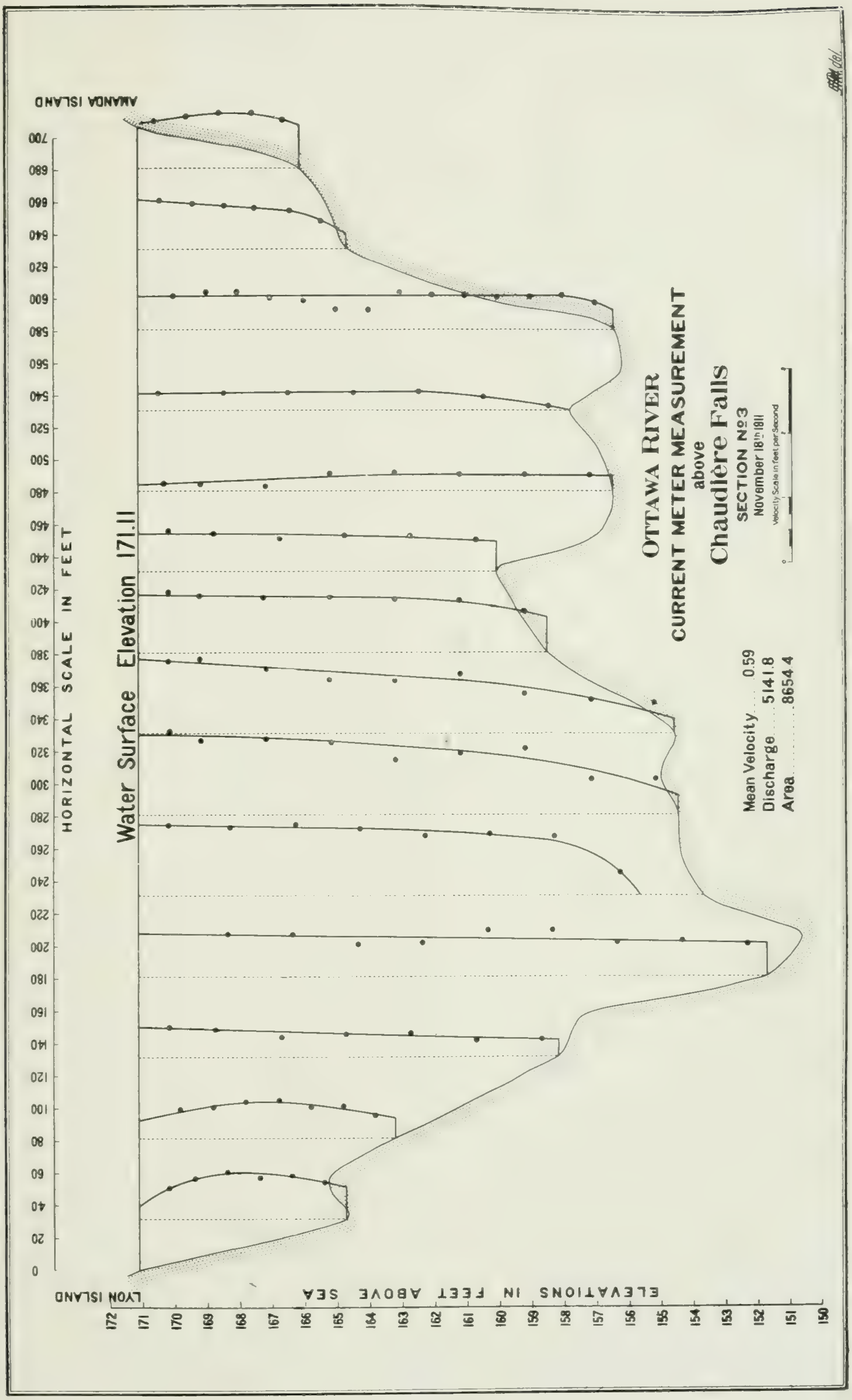
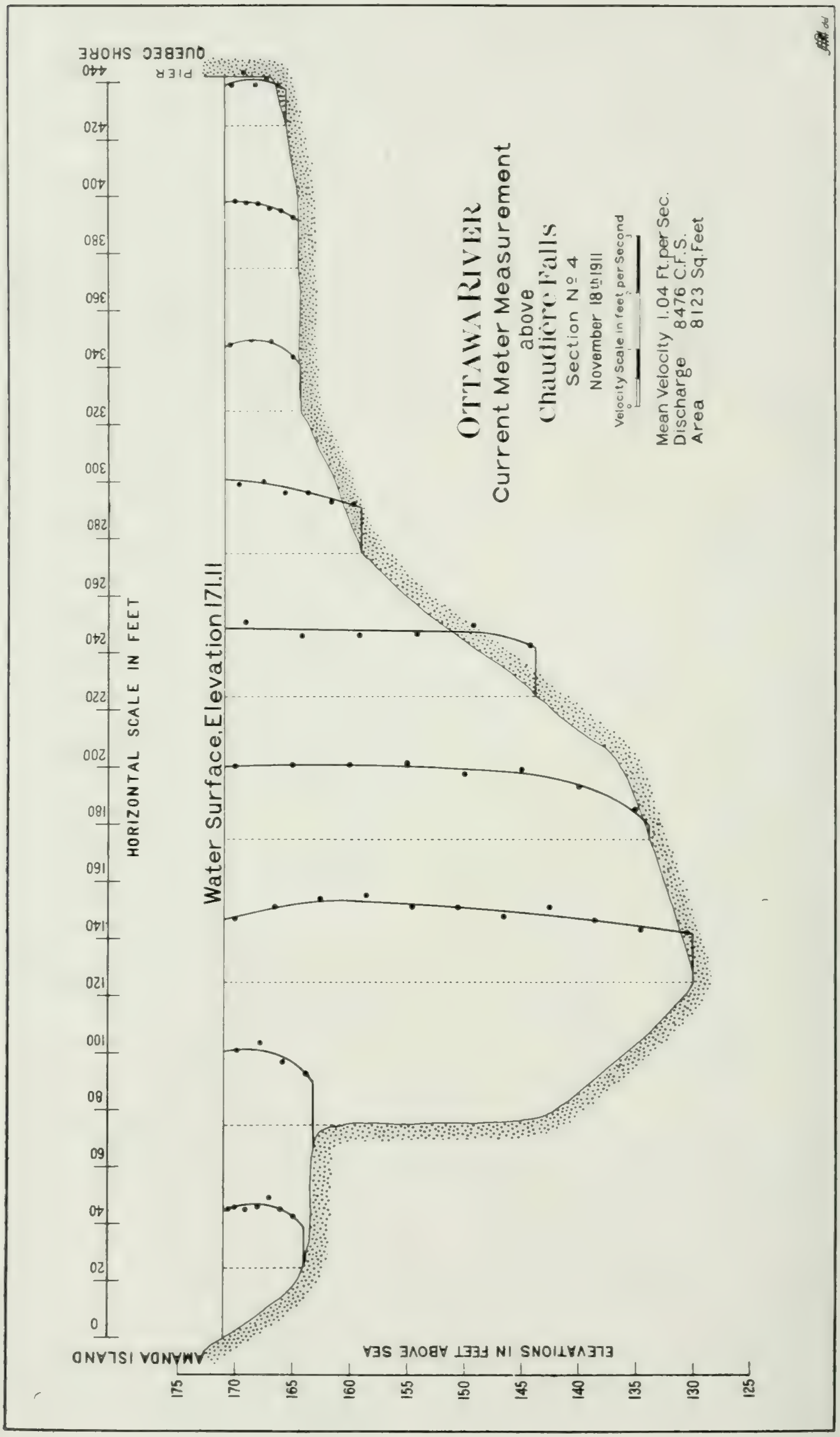


Plate No. 23.


OTTAWA RIVER
Current Meter Measurement
above
Chaudière Falls
Section No 4
November 18th 1911
Velocity Scale in feet per Second
0
1
2
Mean Velocity 1.04 Ft. per Sec.
Discharge 8476 C.F.S.
Area 8123 Sq. Feet
Water Surface, Elevation 171.11
QUEBEC SHORE
PIER
AMANDA ISLAND
HORIZONTAL SCALE IN FEET
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
ELEVATIONS IN FEET ABOVE SEA
175
170
165
160
155
150
145
140
135
130
125

Public Works, Canada.

OTTAWA-RIVER STORAGE

DAILY DISCHARGE OF THE

GATINEAU RIVER

at Chelsea, Que.

from the

1st. of April 1911 to 31st. March 1912

Drainage Area = 9130 Sq.Miles

Maximum and Minimum Flows

	Max		Min.	
1900	49400	C.F.S.	6350	C.F.S.
1901	46700	::	4500	::
1902	39800	::	4500	::
1903	34350	::	6800	::
1904	63380	::	7100	::
1905	35975	::	5125	::
1906	32725	::	4875	::
1907	46325	::	5625	::
1908	66525	::	3400	::
1909	80350	::	3500	::
1910	48600	::	4625	::
1911	51200	::	3900	::
Mean	49800		5025	

1911 — 1912

RUN OFF IN CUBIC FEET PER SECOND PER SQUARE MILE

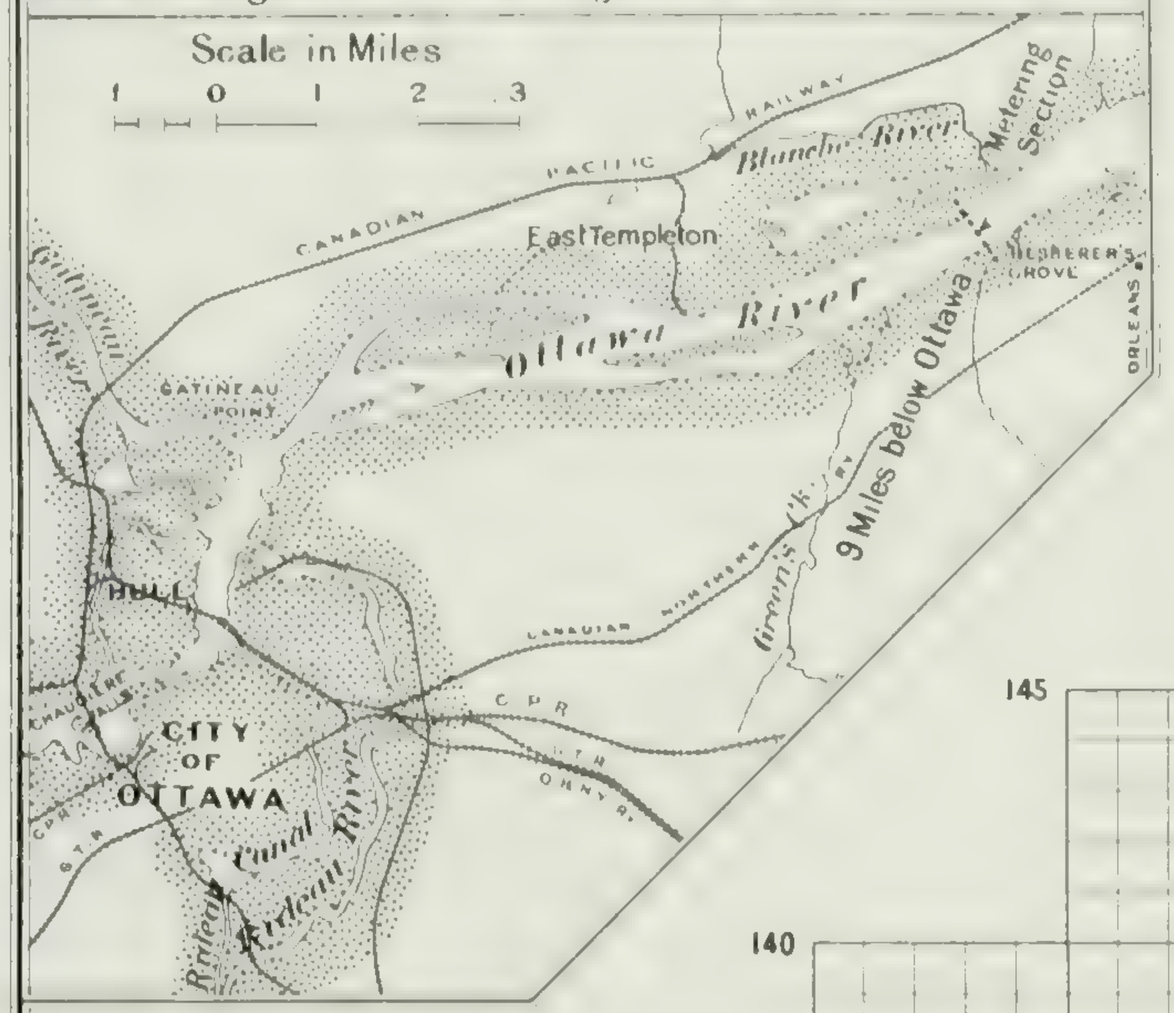
DISCHARGE IN CUBIC FEET PER SECOND

DISCHARGE IN CUBIC FEET PER SECOND

April May June July August September October November December January February March

J.E.R. Hartt, Jr.

Plan showing location of Metering Section at Besserer's Grove



PUBLIC WORKS, CANADA

OTTAWA RIVER STORAGE

DISCHARGE AREA AND VELOCITY CURVES

OF THE

OTTAWA RIVER

AT

Besserer's Grove, 9 Miles below Ottawa

Datum Mean Sea Level, Atlantic.

Revised 1912

METERING SECTION AT BESSERER'S GROVE SHOWING VERTICAL VELOCITY CURVES

Bdel.

Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE

OF

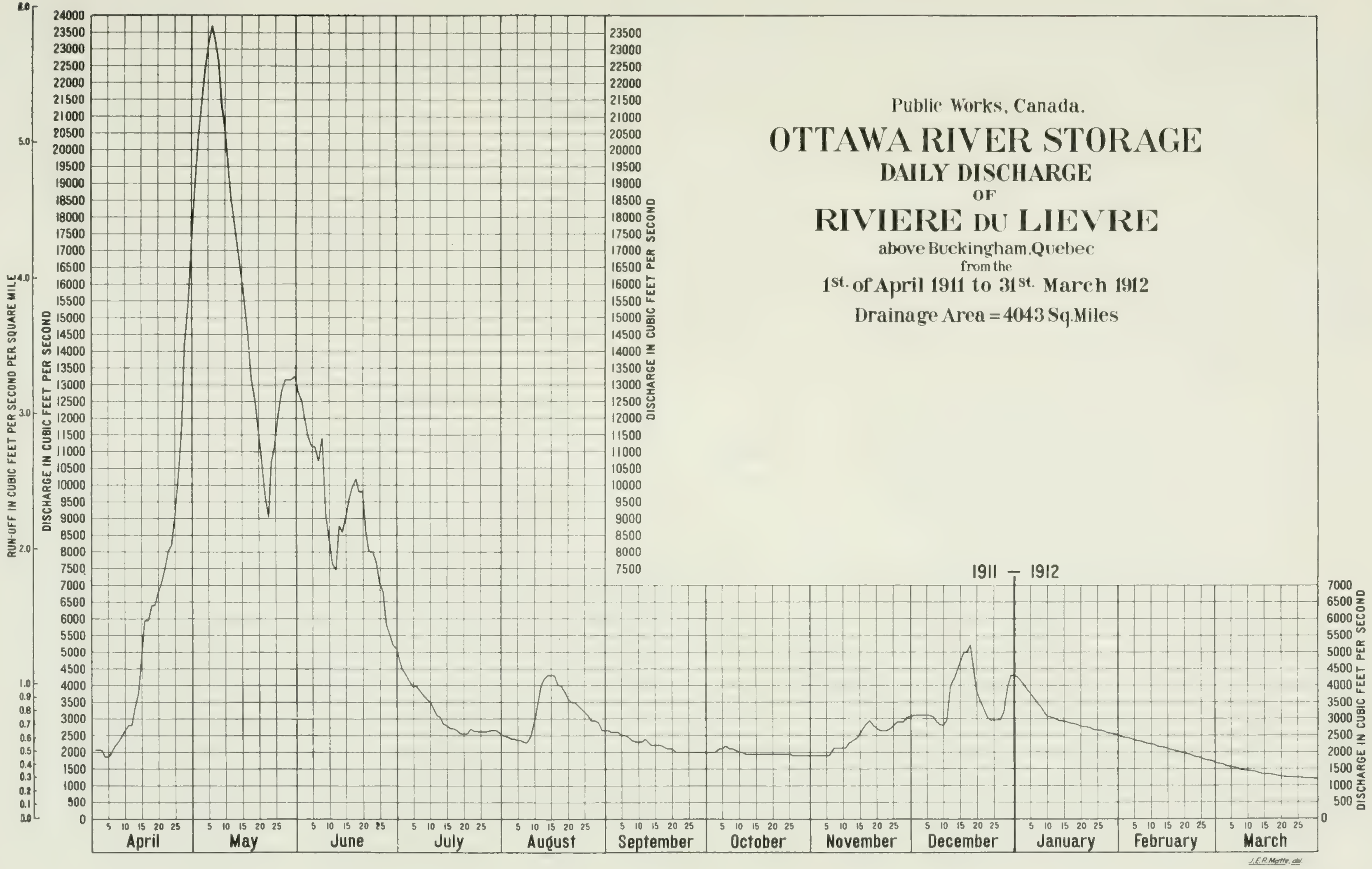
RIVIERE DU LIEVRE

above Buckingham, Quebec

from the

1st. of April 1911 to 31st. March 1912

Drainage Area = 4043 Sq. Miles



Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE OF THE SOUTH NATION RIVER

at Plantagenet Springs, Ont.

from the

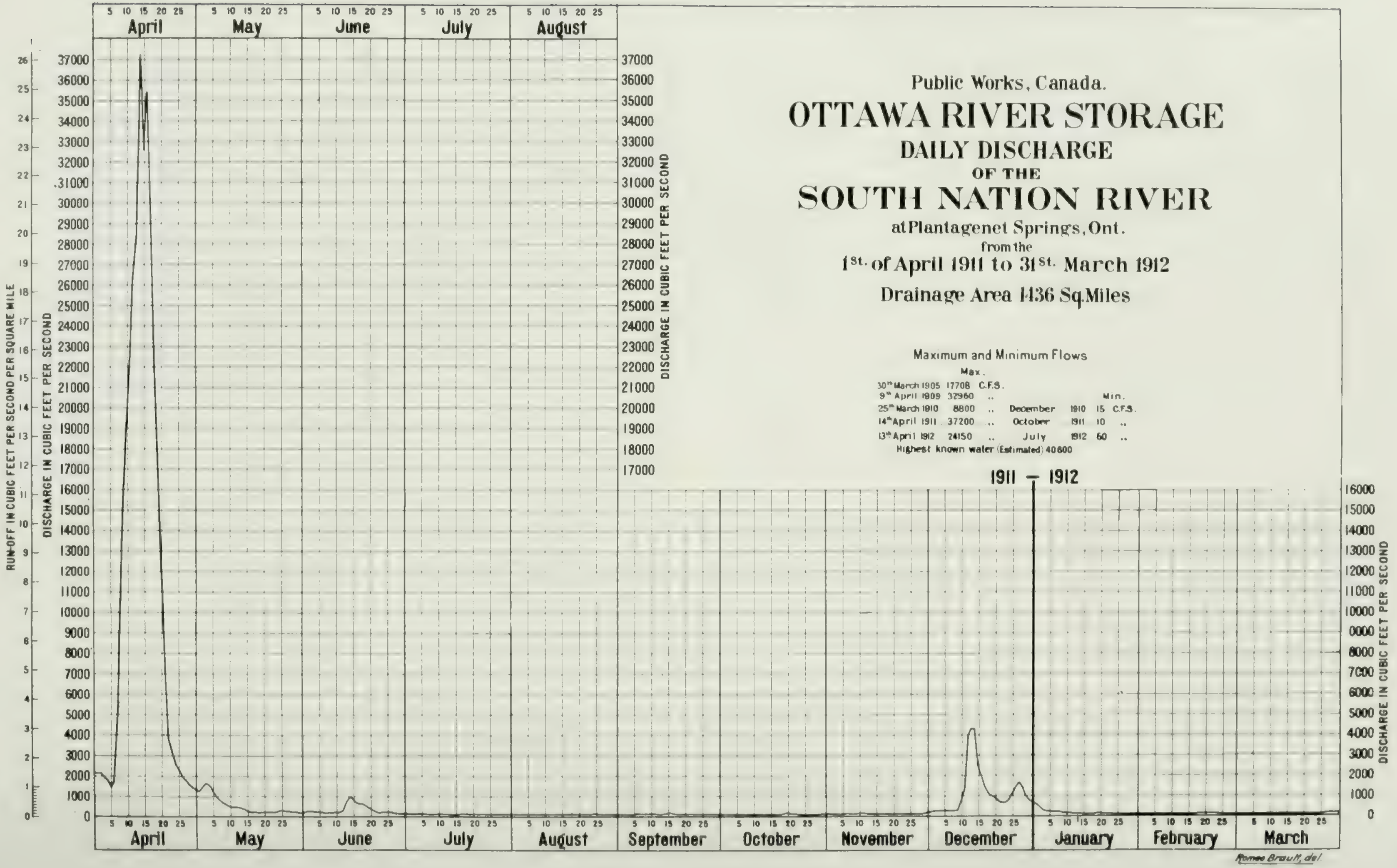
1st. of April 1911 to 31st. March 1912

Drainage Area 1436 Sq. Miles

Maximum and Minimum Flows

	Max.				Min.
30th March 1905	17708	C.F.S.			
9th April 1909	32960	..			
25th March 1910	8800	..	December	1910	15 C.F.S.
14th April 1911	37200	..	October	1911	10 ..
13th April 1912	24150	..	July	1912	60 ..

Highest known water (Estimated) 40600



SESSIONAL PAPER No. 19

Plate No. 28.

Public Works, Canada.

OTTAWA RIVER STORAGE

DAILY DISCHARGE OF THE ROUGE RIVER

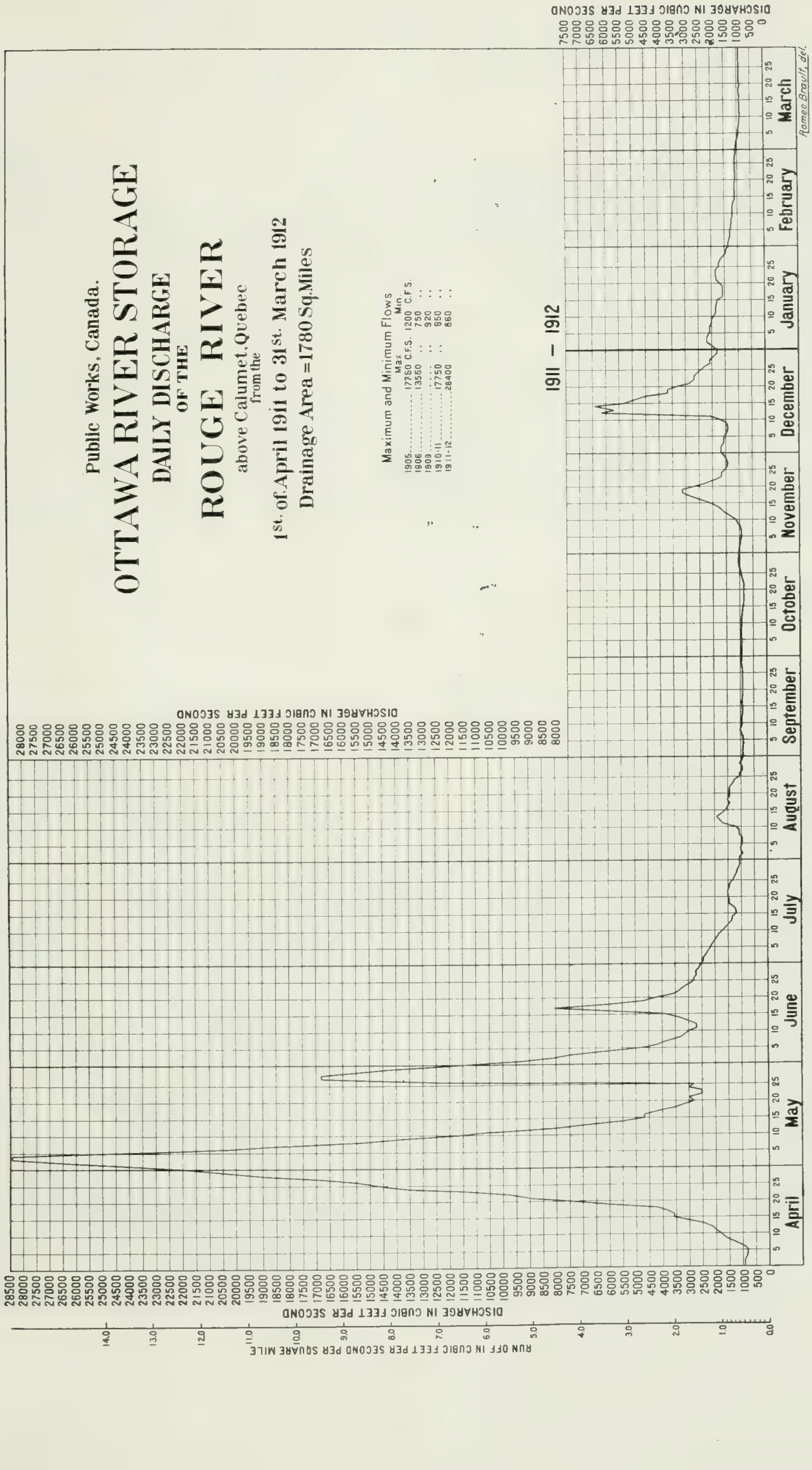
above Calumet, Quebec from the

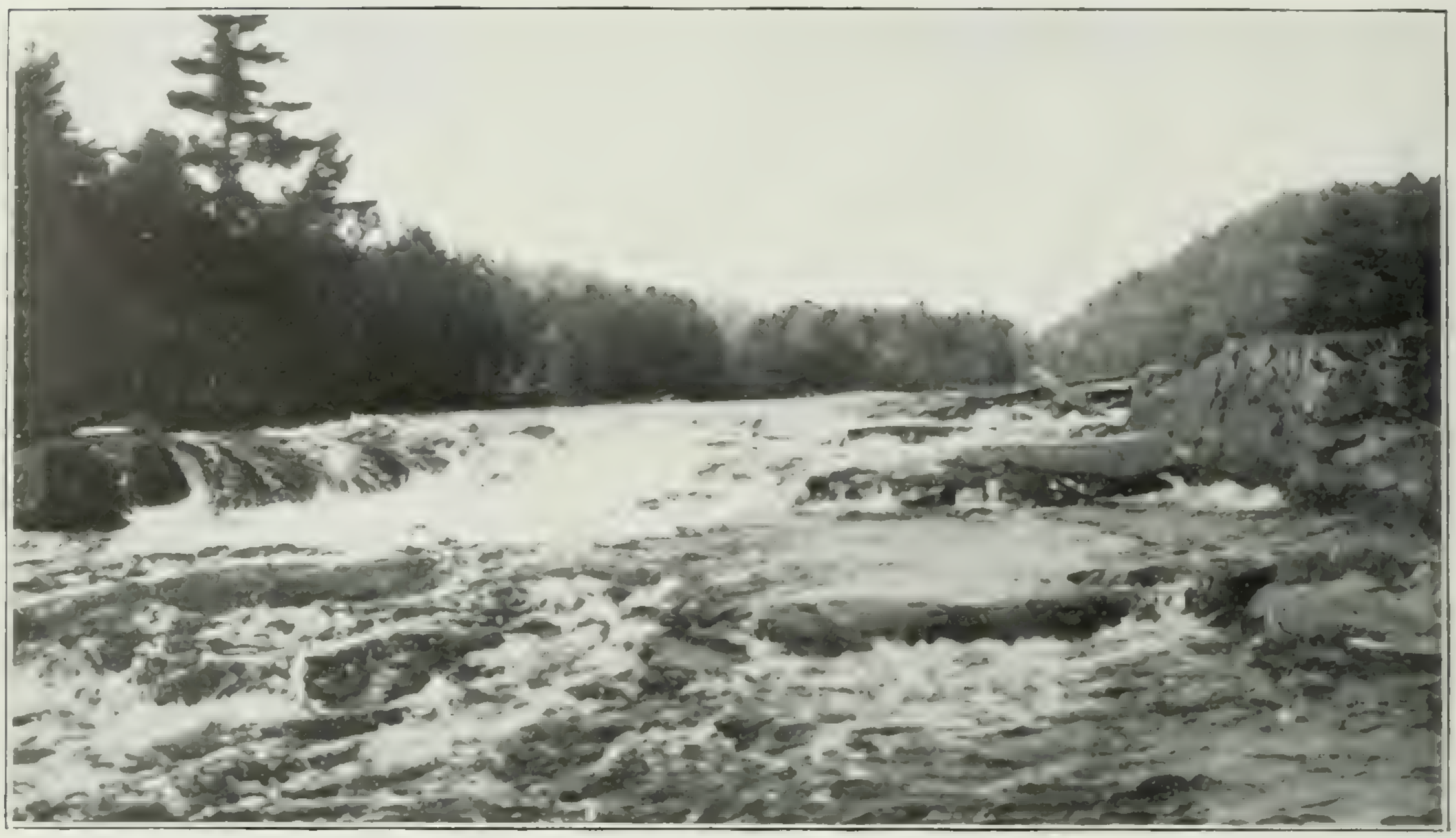
1st. of April 1911 to 31st. March 1912

Drainage Area = 1780 Sq. Miles

Maximum and Minimum Flows

	Max	Min.
1905	17750 C.F.S.	1200 C.F.S.
1906	13560 "	750 "
1909		920 "
1910-11	17750 "	950 "
1911-12	28400	860 "





No. 79—Flat rapid on the Rouge river.



No. 80—Part of cañon on the Rouge River $\frac{1}{3}$ mile above its mouth. The pictures are characteristic of the entire watershed of this river. The hilly nature of the country is probably the direct cause of the extreme freshets that frequently occur in the spring.



No. 81—Party metering the St. Lawrence river above the Cedar rapids. Two rowboats are attached firmly together forming a catamaran that is not affected by any movement of the boats nor by small waves.



No. 82—Current meter measurements in progress on the St. Lawrence river. Three rowboats are used, two of these are fastened together for stability, and the third one used to regulate the distances between each move of the catamaran.



No. 83—St. Lawrence river above the metering section at Lanoraie.



No. 84—The St. Lawrence river between the Cedars and Cascades rapids.

corresponding elevations at Lake St. Francis, above and below the Cedars at Lake St. Louis and at Montreal Harbour, Lanoraie, Sorel and at Three Rivers.

Measurements made during 1910 and 1911 are listed on pages 177 to 180. Last year's report describes the stations at Valleyfield, Cedars and Lanoraie, these metering stations are still being used as they cannot well be improved on. The two meterings made between Ile aux Vaches and Cedars village show that channel to be taking a little over 30% of the total flow at Coteau rapids.

The two diagrams giving the temperatures of the air and water at Timiskaming and above Ottawa show a curious difference in the manner in which the curves follow one another.

This is explained by the fact that at Timiskaming the thermometer readings are taken in running water and therefore the temperature does not fluctuate to the same degree as it does in quiet water. The observations above Ottawa were taken at Britannia Bay in quiet water and evidently not at a sufficient depth to overcome the effect of the sun on the surface of the water.

S. B. JOHNSON,

Ottawa, Ont., May, 1912. *Assistant Engineer.*

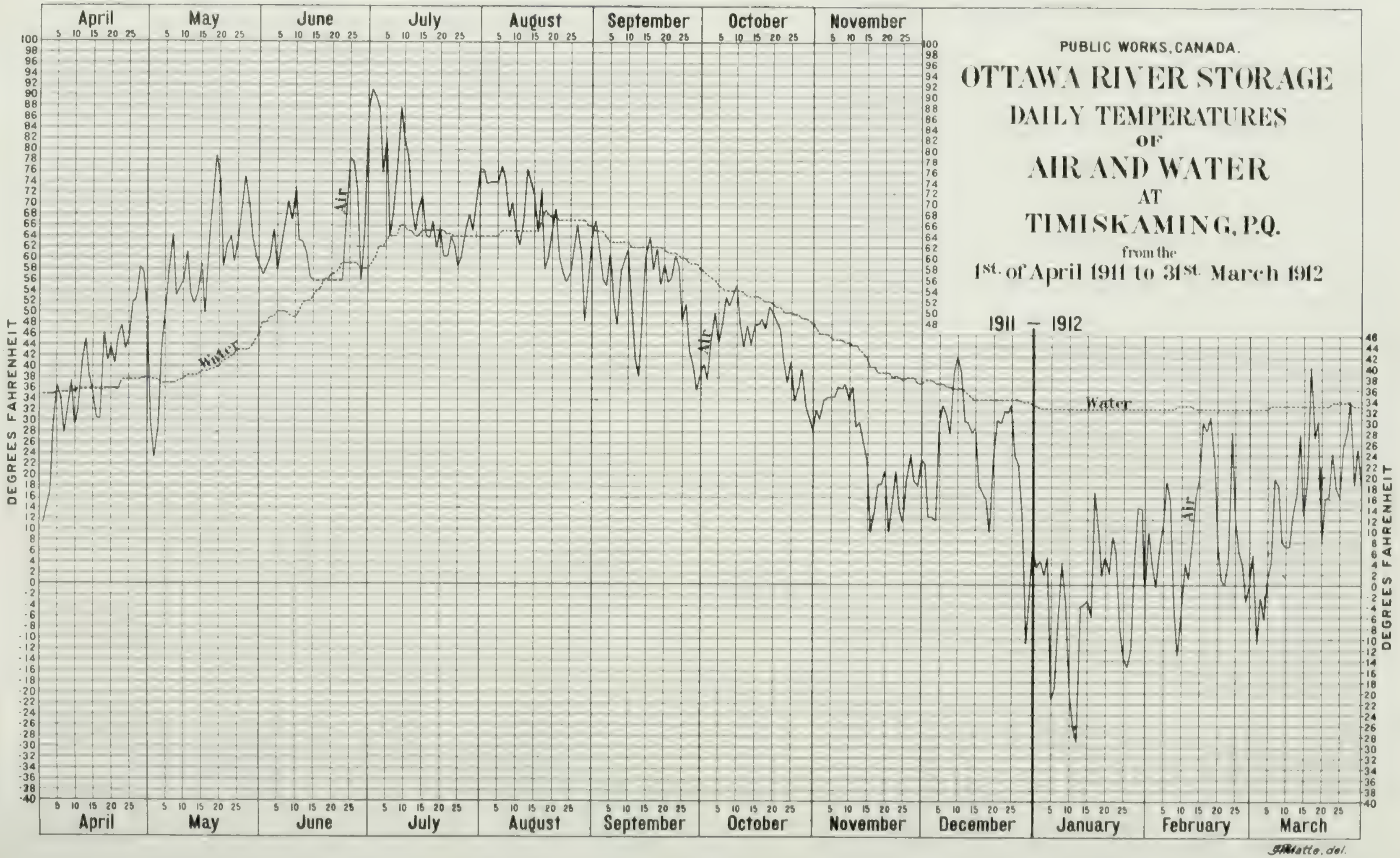
PUBLIC WORKS, CANADA.

OTTAWA RIVER STORAGE

DAILY TEMPERATURES OF AIR AND WATER AT TIMISKAMING, P.Q.

from the 1st. of April 1911 to 31st. March 1912

1911 — 1912



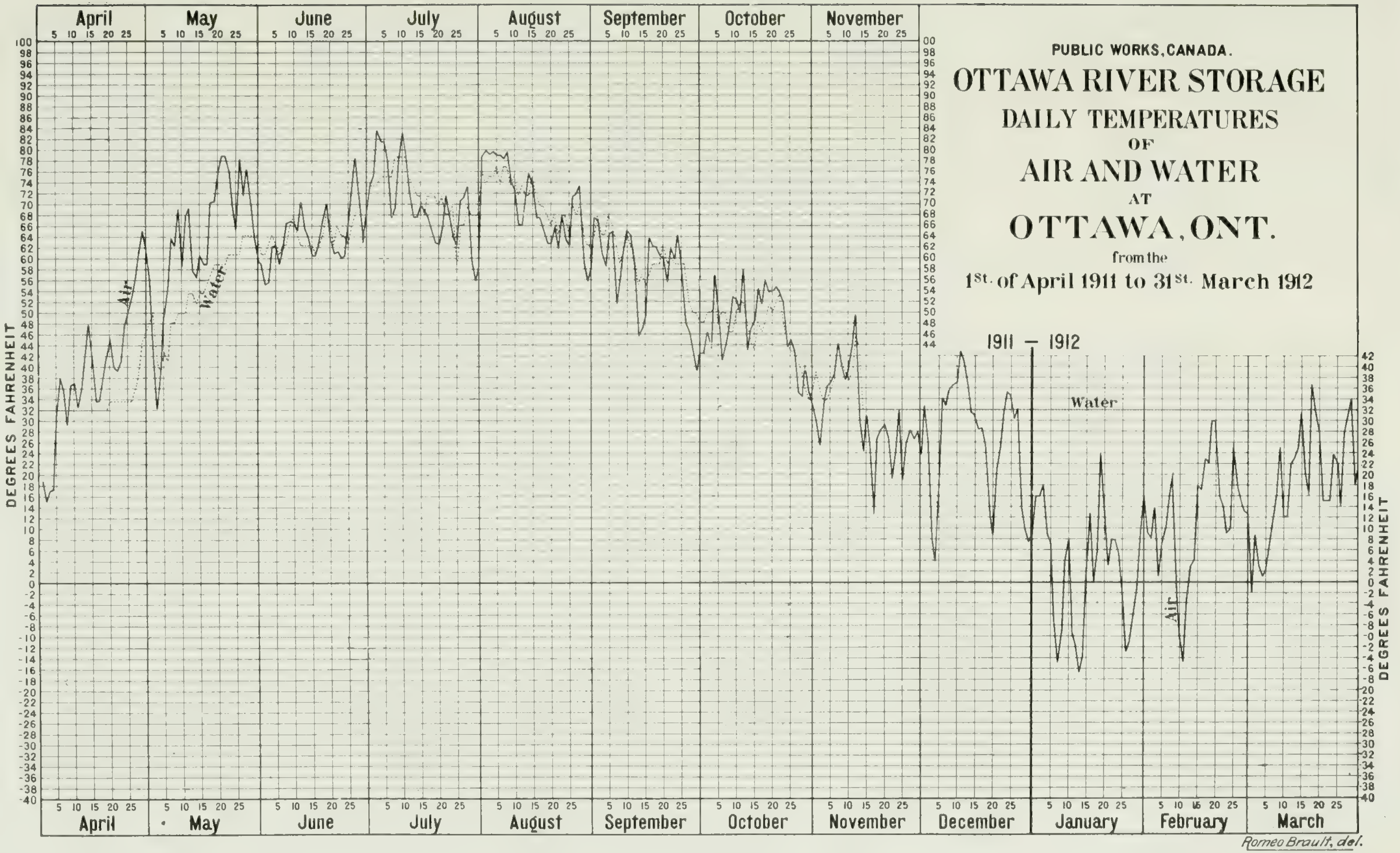
J. Miatte, del.

PUBLIC WORKS, CANADA.

OTTAWA RIVER STORAGE

DAILY TEMPERATURES OF AIR AND WATER AT OTTAWA, ONT.

from the 1st. of April 1911 to 31st. March 1912



Romeo Brault, del.

Elevations of Quinze lake at Douglas Farm, during the year 1911–12.

Table No. 1.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	853·95	858·00	858·70	856·35	855·35	854·90	854·60	855·40	855·85	855·85	855·00	854·55	1
2	853·95	858·45	858·60	856·30	855·35	854·85	854·55	855·45	855·85	855·85	855·00	854·50	2
3	853·95	858·65	858·60	856·25	855·40	854·85	854·55	855·45	855·80	855·80	854·95	854·45	3
4	853·95	858·75	858·50	856·25	855·45	854·85	854·50	855·50	855·80	855·75	854·95	854·45	4
5	853·95	858·85	858·45	856·15	855·40	854·85	854·45	855·55	855·80	855·75	854·95	854·45	5
6	854·00	858·95	858·45	856·15	855·40	854·85	854·45	855·55	855·75	855·70	854·90	854·40	6
7	854·00	858·95	858·25	856·10	855·35	854·85	854·45	855·55	855·70	855·70	854·90	854·40	7
8	854·00	858·95	858·05	856·05	855·40	854·85	854·40	855·45	855·70	855·55	854·90	854·40	8
9	853·95	859·00	857·95	855·95	855·40	854·85	854·35	855·45	855·70	855·55	854·85	854·35	9
10	853·95	859·00	857·85	855·85	855·30	854·80	854·35	855·50	855·65	855·50	854·85	854·35	10
11	853·95	859·05	857·75	855·80	855·30	854·80	854·35	855·50	855·75	855·50	854·85	854·35	11
12	853·95	858·85	857·85	855·75	855·25	854·75	754·35	855·60	855·70	855·50	854·85	854·35	12
13	853·95	858·95	857·90	855·75	855·25	854·75	854·35	855·70	855·75	855·45	854·85	854·35	13
14	854·05	859·05	857·75	855·70	855·35	854·75	854·35	855·90	855·85	855·45	854·85	854·30	14
15	854·05	859·05	857·70	855·65	855·35	854·75	854·35	856·00	855·85	855·45	854·80	854·30	15
16	854·05	859·05	857·65	855·65	855·35	854·80	854·30	856·10	855·95	855·40	854·80	854·30	16
17	854·15	859·05	857·55	855·65	855·30	854·85	854·30	856·10	856·05	855·40	854·80	854·30	17
18	854·20	859·05	857·45	855·55	855·30	854·80	854·30	856·10	856·05	855·35	854·80	854·30	18
19	854·30	859·05	857·35	855·55	855·25	854·75	854·30	856·15	856·05	855·30	854·80	854·30	19
20	854·40	859·05	857·25	855·50	855·25	854·75	854·25	856·15	856·05	855·30	854·75	854·25	20
21	854·50	859·05	857·15	855·45	855·25	854·75	854·35	856·15	856·05	855·25	854·75	854·25	21
22	854·65	859·05	857·05	855·35	855·15	854·75	854·45	856·15	856·05	855·25	854·75	854·25	22
23	854·85	858·95	856·95	855·35	855·15	854·75	854·55	856·15	856·05	855·25	854·70	854·25	23
24	855·00	858·95	856·90	855·45	855·10	854·75	854·65	856·10	856·05	855·20	854·70	854·25	24
25	855·25	859·00	856·85	855·35	855·05	854·75	854·85	856·05	856·05	855·20	854·65	854·20	25
26	855·55	859·00	856·75	855·35	855·05	854·65	854·95	855·95	856·05	855·15	854·65	854·20	26
27	855·95	859·00	856·65	855·35	855·05	854·65	855·05	855·95	856·05	855·15	854·65	854·20	27
28	856·35	858·95	856·55	855·35	855·05	854·65	855·05	855·95	856·10	855·15	854·60	854·15	28
29	856·95	858·85	856·45	855·35	855·00	854·65	855·15	855·95	856·15	855·10	854·60	854·15	29
30	857·55	858·85	856·40	855·35	854·95	854·60	855·35	855·95	856·05	855·05	.....	854·15	30
31	.....	858·85	.....	855·35	854·95	.....	855·35	.....	855·95	855·05	.....	854·15	31

ELEVATIONS of Quinze River at foot of Maple Rapids, during the year 1911-12.

TABLE No. 2.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	.....	825·50	826·25	822·95	821·45	820·95	819·90	821·65	821·90	821·90	820·35	819·95	1
2	.....	825·60	826·15	822·85	821·45	.....	.....	821·75	821·90	821·85	820·25	820·00	2
3	.....	826·10	826·05	822·75	821·45	.....	.....	821·80	821·85	821·80	820·10	820·00	3
4	.....	826·25	825·90	822·70	821·45	.....	819·80	821·80	821·80	821·80	820·05	820·05	4
5	.....	826·30	825·75	822·65	821·45	.....	819·80	821·70	821·80	821·70	820·00	820·05	5
6	.....	826·40	825·55	822·60	821·45	.....	819·75	821·70	821·70	821·65	819·90	820·05	6
7	.....	826·40	825·45	822·55	821·40	.....	819·75	821·65	821·65	821·60	819·90	820·05	7
8	.....	826·45	825·35	822·40	821·40	.....	819·70	821·60	821·60	821·50	819·85	820·05	8
9	.....	826·50	825·20	822·30	821·45	820·75	819·70	821·55	821·60	821·50	819·85	819·95	9
10	.....	826·50	825·15	822·20	821·45	820·70	819·65	821·50	821·60	821·45	819·85	819·85	10
11	.....	826·50	825·15	822·10	821·45	820·65	819·65	821·50	821·60	821·45	819·90	819·80	11
12	.....	826·50	825·10	822·05	821·45	820·60	819·65	821·50	821·70	821·40	819·95	819·78	12
13	.....	826·50	825·05	821·95	821·45	822·55	819·60	821·50	821·85	821·40	819·95	819·74	13
14	.....	826·55	824·95	821·90	821·45	820·55	819·60	821·65	822·00	821·35	819·95	819·70	14
15	.....	826·60	824·90	821·90	821·45	820·45	819·60	821·80	822·10	821·35	819·85	819·68	15
16	.....	826·60	824·80	821·90	821·40	820·45	819·60	822·00	822·10	821·35	819·80	819·64	16
17	.....	826·60	824·70	821·85	821·40	820·40	819·60	822·15	822·10	821·35	819·85	819·52	17
18	.....	826·60	824·50	821·80	821·35	820·35	819·60	822·20	822·15	821·35	819·80	819·41	18
19	.....	826·55	824·40	821·75	821·35	820·30	819·65	822·20	822·15	821·35	819·80	819·30	19
20	.....	826·50	824·30	821·70	821·35	820·30	819·75	822·20	822·15	821·35	819·80	819·20	20
21	.....	826·50	824·20	821·65	821·30	820·25	819·85	822·20	822·15	821·30	819·75	819·21	21
22	.....	826·50	824·10	821·60	821·30	820·25	819·95	822·20	822·20	821·25	819·75	819·21	22
23	.....	826·50	823·95	821·55	821·25	820·20	820·00	822·20	822·15	821·25	819·75	819·21	23
24	.....	826·50	823·80	821·55	821·20	820·15	820·05	822·20	822·15	821·15	819·80	819·16	24
25	.....	826·50	823·65	821·55	821·15	820·10	820·15	822·20	822·15	821·10	819·80	819·16	25
26	.....	826·45	823·55	821·55	821·10	820·05	820·30	822·20	822·15	821·05	819·85	819·16	26
27	.....	826·45	823·40	821·50	821·10	820·00	820·45	822·20	822·10	820·95	819·85	819·11	27
28	.....	826·45	823·25	821·45	821·10	819·95	820·60	822·15	822·10	820·85	819·90	819·11	28
29	.....	826·45	823·10	821·45	821·05	819·95	820·85	222·05	822·05	820·75	819·95	819·06	29
30	.....	826·45	823·00	821·45	821·05	819·90	821·15	821·95	822·00	820·60	.....	819·06	30
31	.....	826·35	.....	821·45	820·95	.....	821·40	.....	821·90	820·50	.....	819·06	31

ELEVATIONS of Lake Timiskaming at Haileybury, during the year 1911–12.

TABLE No. 3.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	583·45	589·65	587·15	583·45	579·35	579·20	577·95	578·80	582·25	583·45	582·15	581·95	1
2	583·40	590·45	587·05	583·15	579·35	579·20	577·95	578·90	582·25	583·45	581·85	582·00	2
3	583·30	590·95	586·85	582·85	579·35	579·15	578·00	578·95	582·25	583·45	581·80	582·10	3
4	583·25	591·45	586·65	582·55	579·30	579·10	578·00	578·95	582·25	583·35	581·80	582·15	4
5	583·25	590·95	586·45	582·25	579·25	578·95	577·95	579·00	582·35	583·30	581·80	582·15	5
6	583·20	590·55	586·20	582·00	579·25	578·85	577·95	579·05	582·35	583·30	581·65	582·15	6
7	583·20	590·15	586·00	581·70	579·25	578·90	577·90	579·15	582·30	583·25	581·60	582·10	7
8	583·15	589·85	586·30	581·45	579·30	578·80	577·90	579·25	582·25	583·25	581·60	582·05	8
9	583·10	589·55	586·05	581·35	579·35	578·85	577·90	579·35	582·20	583·20	.....	582·00	9
10	583·05	589·35	585·75	581·05	579·40	578·75	577·85	579·45	582·20	583·15	581·55	581·95	10
11	583·05	589·10	585·55	580·85	579·45	578·75	577·80	579·55	582·30	583·10	581·50	581·95	11
12	583·00	588·85	585·75	580·55	579·45	578·70	577·75	579·70	582·30	583·05	581·45	581·90	12
13	583·00	588·85	585·40	580·45	579·65	578·60	577·65	579·95	582·45	583·05	581·45	581·90	13
14	583·15	588·55	585·35	580·30	579·75	578·60	577·65	580·35	582·70	582·95	581·40	581·95	14
15	583·50	588·50	585·50	580·10	579·75	578·55	577·60	580·55	583·00	582·90	581·35	581·85	15
16	583·70	588·40	585·65	579·95	579·85	578·55	577·50	580·65	583·10	582·85	581·35	581·90	16
17	583·80	588·25	585·75	579·90	579·85	578·55	.....	580·85	583·25	582·80	581·30	581·90	17
18	583·90	588·05	585·85	579·80	579·80	.....	577·50	581·05	583·35	582·75	581·25	581·85	18
19	584·10	588·00	585·80	579·75	579·65	578·50	577·45	581·45	583·35	582·75	581·35	581·80	19
20	584·35	587·90	585·80	579·70	579·70	578·45	577·45	581·55	583·35	582·70	581·40	581·75	20
21	584·60	587·85	585·70	579·65	579·70	578·45	577·40	581·65	573·35	582·70	581·45	581·70	21
22	584·85	587·75	585·60	579·60	579·65	578·45	577·40	581·90	583·45	582·62	581·50	581·70	22
23	585·25	587·75	585·35	579·45	579·60	578·50	577·55	581·95	.....	582·52	581·55	581·65	23
24	585·50	587·75	585·20	579·40	579·60	.....	577·70	582·00	583·50	582·45	581·60	581·60	24
25	585·95	587·80	584·85	579·35	579·55	578·35	577·95	582·10	583·50	582·42	581·60	581·50	25
26	586·45	587·85	584·65	579·35	579·50	578·25	578·25	582·15	583·50	582·35	581·60	581·40	26
27	587·05	587·80	584·45	579·35	579·45	578·30	578·35	582·20	583·50	582·28	581·80	581·35	27
28	587·55	587·75	584·15	579·35	579·40	578·10	578·35	.....	583·50	582·22	581·90	581·25	28
29	588·30	587·65	583·85	579·35	579·35	578·05	578·55	582·25	583·50	582·17	581·95	581·25	29
30	589·05	587·45	583·60	579·40	579·25	578·05	578·65	582·25	583·50	582·17	.....	581·15	30
31	.....	587·35	.....	579·35	579·15	.....	578·65	.....	583·45	582·17	.....	581·05	31

ELEVATIONS of Montreal River at Latchford, during the year 1911–12.

TABLE No. 4.

Day.	April.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	897·30	904·10	901·30	899·15	898·34	897·75	897·15	898·05	899·00	899·20	898·15	897·90	1
2	897·35	904·75	901·10	899·00	898·15	897·70	897·55	898·05	899·05	899·10	898·15	897·90	2
3	897·40	904·30	900·90	898·90	898·10	897·70	897·50	898·00	899·10	899·05	898·10	897·85	3
4	897·25	904·15	900·80	898·74	898·03	897·70	897·60	897·95	899·25	899·00	898·10	897·80	4
5	897·30	904·05	900·70	898·62	897·97	897·70	897·65	898·10	899·20	899·00	898·10	897·75	5
6	897·30	903·95	900·60	898·50	897·96	897·65	897·50	898·00	899·05	898·95	898·05	897·70	6
7	897·30	903·90	900·10	898·45	897·99	897·65	897·35	897·95	899·00	898·95	898·00	897·70	7
8	897·35	903·85	899·80	898·35	897·98	897·65	897·35	897·95	898·90	898·95	897·95	897·70	8
9	897·35	903·60	900·40	898·36	897·94	897·60	897·45	898·10	898·90	898·90	897·95	897·70	9
10	897·45	903·70	900·15	898·25	897·88	897·60	897·10	898·05	898·85	898·90	897·85	897·65	10
11	897·35	903·75	900·05	898·15	897·32	897·70	897·05	898·05	899·00	898·85	897·85	897·65	11
12	897·35	903·85	900·10	898·06	898·38	897·60	896·95	898·15	899·00	898·80	897·75	897·65	12
13	897·40	903·65	900·35	898·01	898·40	897·55	896·85	898·60	899·20	898·70	897·75	897·65	13
14	897·50	903·60	900·60	897·90	898·45	897·50	896·75	898·70	899·30	.....	897·75	897·60	14
15	897·65	903·65	901·90	897·86	898·45	897·50	896·80	898·90	899·40	.....	897·70	897·60	15
16	897·70	902·95	901·55	897·90	898·35	897·45	897·10	899·30	899·50	.....	897·70	897·60	16
17	897·80	903·05	901·45	897·95	898·30	897·50	896·85	899·30	899·65	.....	897·70	897·55	17
18	897·80	903·00	901·40	897·75	898·25	897·60	896·30	899·30	899·65	.....	897·70	897·50	18
19	897·80	902·90	901·30	897·70	898·20	897·45	896·00	899·30	899·55	.....	897·65	897·40	19
20	898·10	902·85	901·10	897·60	898·25	897·45	895·55	899·30	899·55	.....	897·70	897·30	20
21	898·30	901·80	900·90	897·70	898·20	897·45	895·65	899·25	899·50	898·55	897·75	897·25	21
22	898·55	901·20	900·85	897·60	898·10	897·40	895·80	899·25	899·45	898·55	897·75	897·10	22
23	898·90	902·20	900·55	897·80	898·00	897·40	896·70	899·25	899·45	898·45	897·75	896·95	23
24	899·15	902·10	900·40	897·85	898·00	897·35	897·35	899·25	899·45	898·40	897·80	897·00	24
25	899·60	902·10	900·20	897·95	897·95	897·30	897·70	899·20	899·40	898·35	897·80	897·00	25
26	900·30	901·95	900·00	898·05	897·90	897·30	897·90	899·15	899·40	898·30	897·85	897·05	26
27	901·60	901·90	899·90	898·15	897·80	897·25	898·00	899·15	899·40	898·30	897·90	897·05	27
28	902·30	901·80	899·75	898·30	897·95	897·20	898·00	899·10	899·30	898·30	898·00	897·10	28
29	903·00	901·75	899·60	898·15	897·85	897·20	898·05	899·10	899·25	898·30	897·95	897·15	29
30	903·60	901·60	899·30	898·30	897·85	897·20	898·20	899·05	899·20	898·25	.....	897·10	30
31	.....	901·40	.....	898·36	897·80	.....	898·10	.....	899·15	898·20	.....	897·10	31

ELEVATIONS of Timiskaming Lake at Timiskaming Station, during the year 1911–12.

TABLE No. 5.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day
1	583·10	589·20	585·60	582·00	578·55	578·40	577·30	578·05	581·50	582·72	581·30	581·30	1
2	583·05	589·85	585·40	581·75	578·52	578·35	577·30	578·10	581·60	582·65	581·30	581·35	2
3	582·95	590·20	585·25	581·45	578·62	578·40	577·30	578·10	581·60	582·62	581·25	581·39	3
4	582·95	590·30	585·03	581·35	578·62	578·25	577·10	578·10	581·50	582·60	581·15	581·38	4
5	582·90	589·10	584·90	581·20	578·50	578·15	577·35	578·15	581·40	582·60	581·10	581·37	5
6	582·85	588·45	584·60	581·00	578·53	578·30	577·20	578·20	581·40	582·55	581·00	581·36	6
7	582·85	588·10	584·50	580·69	578·55	578·20	577·15	578·25	581·45	582·50	580·95	581·33	7
8	582·80	587·90	584·25	580·42	578·47	578·10	577·15	578·45	581·40	582·40	580·90	581·35	8
9	582·80	587·65	584·10	580·15	578·53	578·10	577·10	578·55	581·35	582·40	580·85	581·40	9
10	582·80	587·50	583·95	580·04	578·70	578·00	577·05	578·55	581·35	582·35	.....	581·45	10
11	582·75	587·15	583·90	579·82	578·71	577·90	577·05	578·65	581·35	582·30	580·80	581·36	11
12	582·70	587·00	583·75	579·75	578·80	578·05	577·10	578·80	581·65	582·20	580·75	581·35	12
13	582·70	587·05	583·60	579·55	578·85	578·00	577·00	579·35	581·80	582·10	580·70	581·30	13
14	582·75	586·85	584·50	579·36	578·90	577·80	576·90	579·50	582·00	582·05	580·65	581·20	14
15	583·00	586·65	584·50	579·17	579·00	577·70	576·80	579·80	582·10	582·15	580·70	581·27	15
16	583·35	586·65	584·55	579·12	579·10	577·80	576·80	580·10	582·25	582·10	580·75	581·20	16
17	583·50	586·45	584·60	579·02	579·00	577·80	576·70	580·15	582·31	581·95	580·75	581·10	17
18	583·50	586·35	584·55	578·90	579·05	577·70	576·70	580·30	582·51	581·95	580·80	581·09	18
19	583·75	586·15	584·60	578·85	579·15	577·70	576·60	580·35	582·41	581·95	580·80	580·97	19
20	584·00	586·10	584·65	578·80	578·90	577·70	576·70	580·70	582·45	581·80	580·85	580·97	20
21	584·20	586·10	584·55	578·67	578·85	577·65	576·70	580·85	582·58	581·75	580·85	581·00	21
22	584·45	586·10	584·45	578·60	578·80	577·60	576·70	580·85	582·58	581·70	580·95	580·92	22
23	584·90	586·00	584·25	578·55	578·85	577·50	576·80	580·95	582·62	581·70	580·95	580·88	23
24	585·20	586·00	584·00	578·50	578·80	577·65	577·05	581·30	582·60	581·70	580·95	580·85	24
25	585·55	586·10	583·60	578·58	578·70	577·70	577·05	581·20	582·60	581·65	581·05	580·82	25
26	586·00	586·10	583·35	578·58	578·80	577·50	577·30	581·30	582·62	581·60	581·10	580·72	26
27	586·50	586·00	583·10	578·50	578·70	577·50	577·55	581·30	582·72	581·60	581·25	580·63	27
28	587·05	585·90	582·95	578·45	578·65	577·45	577·55	581·45	582·72	581·55	581·20	580·58	28
29	587·70	585·90	582·70	578·53	578·70	577·40	477·70	581·55	582·70	581·50	581·27	580·47	29
30	588·62	585·80	582·34	578·50	578·55	577·30	577·85	581·40	582·70	581·50	.....	580·36	30
31	.....	585·55	.....	578·49	578·50	.....	577·95	.....	582·71	581·40	.....	580·25	31

ELEVATIONS of Ottawa River below Timiskaming Dam, during the year 1911–12.

TABLE NO. 6.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	569·40	574·75	578·00	575·89	571·47	570·80	570·20	570·80	572·05	572·23	570·95	570·95	1
2	569·40	575·30	577·90	575·49	571·42	570·85	570·10	570·80	572·10	572·20	570·88	570·98	2
3	569·35	575·75	577·85	574·99	571·47	570·80	570·05	570·75	572·05	572·18	570·84	571·00	3
4	569·35	580·50	577·65	574·69	571·57	570·75	569·95	570·80	571·95	572·00	570·80	571·00	4
5	569·35	580·20	577·55	574·39	571·57	570·75	570·35	570·75	571·95	572·00	570·75	571·00	5
6	569·35	579·90	577·35	574·10	571·52	570·75	569·95	570·70	571·95	571·95	570·70	571·00	6
7	569·30	579·60	577·20	573·90	571·50	570·70	569·95	570·75	571·85	571·90	570·70	570·97	7
8	569·25	579·45	577·10	573·72	571·52	570·70	569·95	570·80	571·85	571·90	570·65	570·97	8
9	569·25	579·30	576·95	573·62	571·47	570·65	569·90	570·80	571·85	571·85	570·60	570·95	9
10	569·20	579·15	576·90	573·47	571·52	570·65	569·80	570·80	571·85	571·80	570·55	570·96	10
11	569·20	578·90	577·00	573·32	571·57	570·60	569·80	570·80	571·90	571·80	570·52	570·94	11
12	569·20	578·80	576·80	573·07	571·52	570·55	570·05	571·10	572·00	571·75	570·50	570·92	12
13	569·15	578·70	576·90	572·87	571·40	570·55	570·05	571·20	572·10	571·70	570·45	570·90	13
14	569·15	578·65	576·40	572·77	571·35	570·50	570·15	571·40	572·20	571·70	570·40	570·93	14
15	569·50	578·55	576·30	572·62	571·30	570·50	570·10	571·45	572·30	571·70	570·45	570·98	15
16	569·65	578·50	576·20	572·37	571·35	570·45	570·05	571·55	572·30	571·60	570·50	570·94	16
17	569·75	578·45	576·25	572·17	571·30	570·45	569·75	571·60	572·36	571·65	570·50	570·93	17
18	569·80	578·40	576·20	571·77	571·25	570·40	569·70	571·65	572·43	571·60	570·50	570·93	18
19	569·90	578·25	576·20	571·57	571·25	570·40	569·60	571·75	572·38	571·55	570·55	570·95	19
20	570·10	578·20	576·20	571·67	571·20	570·35	569·60	571·80	572·30	571·50	570·60	570·96	20
21	570·20	578·10	576·40	571·77	571·15	570·35	569·60	571·95	572·38	571·45	570·60	570·90	21
22	570·35	578·10	576·50	571·87	571·15	570·35	569·60	572·00	572·38	571·45	570·65	570·86	22
23	570·65	578·15	576·40	571·82	571·15	570·35	569·65	571·90	572·36	571·40	570·70	570·77	23
24	571·05	578·20	576·30	571·77	571·10	570·30	569·65	571·95	572·38	571·35	570·70	570·77	24
25	571·40	578·30	576·30	571·67	571·05	570·25	569·70	572·00	572·38	571·30	570·75	570·76	25
26	571·75	578·50	576·29	571·67	571·05	570·25	570·05	572·00	572·48	571·20	570·80	570·67	26
27	572·25	578·40	576·29	571·57	571·05	570·25	570·10	572·05	572·43	571·10	570·85	570·56	27
28	572·75	578·35	576·29	571·44	571·05	570·20	570·40	572·10	572·40	571·05	570·85	570·50	28
29	573·30	578·30	576·19	571·37	570·95	570·15	570·50	572·10	572·36	571·05	570·91	570·46	29
30	574·15	578·25	576·19	571·47	570·90	570·22	570·60	572·05	572·30	571·00	.....	570·29	30
31	.....	578·10	.....	571·57	570·85	.....	570·70	.....	572·28	570·95	.....	570·18	31

Elevations of Kipawa Lake at Kipawa, Que., during the year 1911–12.

Table No. 7.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	873·85	876·60	882·30	880·49	879·95	879·20	878·70	878·50	879·10	880·15	880·90	879·20	1
2	873·85	876·90	882·30	880·48	879·95	879·20	878·70	878·45	879·15	880·15	880·90	879·10	2
3	873·90	877·20	882·25	880·42	879·92	879·20	878·70	878·45	879·20	880·20	880·90	879·05	3
4	873·90	877·50	882·20	880·42	879·95	879·20	878·60	878·40	879·20	880·20	880·90	878·80	4
5	874·00	877·90	882·20	880·42	879·92	879·20	878·65	878·45	879·15	880·25	880·95	878·50	5
6	874·00	878·20	882·15	880·50	879·92	879·20	878·60	878·50	879·15	880·30	880·95	878·40	6
7	874·00	878·50	882·10	880·48	879·90	879·15	878·60	878·50	879·20	880·30	881·00	878·30	7
8	874·05	878·90	882·05	880·43	979·95	879·10	878·55	878·50	879·20	880·35	881·00	878·20	8
9	874·05	879·30	882·00	880·40	879·90	879·10	878·60	878·50	879·20	880·40	881·00	878·00	9
10	874·10	879·60	881·90	880·40	879·90	879·10	878·55	878·50	879·25	880·40	881·00	877·88	10
11	874·10	879·90	881·90	880·50	879·85	879·00	878·60	878·50	879·30	880·40	881·00	877·70	11
12	874·10	880·30	881·90	880·40	879·80	879·05	878·60	878·55	879·40	880·45	881·05	877·55	12
13	874·10	880·60	881·90	880·35	879·70	879·00	878·55	878·55	879·40	880·45	881·05	877·40	13
14	874·20	880·90	881·90	880·30	879·60	878·95	878·50	878·55	879·40	880·45	880·95	877·30	14
15	874·30	881·15	881·80	880·30	879·60	878·90	878·50	878·55	879·50	880·50	880·90	877·20	15
16	874·40	881·40	881·70	880·30	879·50	878·90	878·45	878·55	879·50	880·55	880·85	877·00	16
17	874·50	881·60	881·60	880·30	879·50	878·90	878·40	878·65	879·60	880·55	880·85	876·95	17
18	874·55	881·80	881·55	880·30	879·50	878·90	878·45	878·75	879·60	880·55	880·75	876·90	18
19	874·60	881·90	881·50	880·30	879·50	878·90	878·40	878·80	879·60	880·60	880·60	876·75	19
20	874·60	882·00	881·50	880·30	879·50	379·90	878·40	878·80	978·70	880·60	880·55	876·65	20
21	874·70	882·10	881·35	880·20	879·40	878·85	878·45	878·85	879·70	880·60	880·50	876·55	21
22	874·80	882·15	881·30	880·20	879·45	878·85	878·45	878·85	879·75	880·70	880·35	876·45	22
23	874·90	882·20	881·25	880·10	879·40	878·80	878·50	878·90	879·75	880·70	880·35	876·30	23
24	875·00	882·20	881·15	880·20	879·40	878·80	878·50	878·95	879·80	880·70	880·35	876·20	24
25	875·20	882·30	881·10	880·20	879·35	878·75	878·50	878·95	879·80	880·70	880·05	876·10	25
26	875·40	882·30	881·00	880·15	879·35	878·75	878·50	879·00	879·80	880·75	879·85	876·00	26
27	875·50	882·30	880·90	880·10	879·30	878·70	878·50	879·00	879·90	880·75	879·65	876·00	27
28	875·75	882·30	880·82	880·10	879·30	878·70	878·50	879·00	879·95	880·75	879·50	876·00	28
29	876·00	882·30	880·72	880·05	879·30	878·75	878·45	879·00	880·00	880·80	879·35	876·05	29
30	876·30	882·20	880·60	880·00	879·30	878·70	878·50	879·05	880·00	880·70	.....	876·05	30
31	.....	882·20	.....	880·00	879·25	.....	878·50	.....	880·10	880·70	.....	876·10	31

ELEVATIONS of Gordon creek at Lumsden's Mills, Que., during the year 1911–12.

TABLE No. 8.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	771·15	771·85	772·55	772·25	772·20	772·15	772·05	772·30	772·05	772·15	771·55	771·15	1
2	771·15	771·95	772·35	772·10	772·15	772·25	772·15	772·05	772·05	772·15	771·45	771·15	2
3	771·15	771·55	772·25	772·20	772·20	772·10	772·25	772·25	771·95	772·20	771·45	771·15	3
4	771·15	771·55	772·20	772·15	772·15	772·15	772·20	772·25	772·05	772·45	771·65	771·15	4
5	771·15	771·45	772·35	772·25	772·25	772·15	772·25	772·20	771·85	772·45	771·45	771·15	5
6	771·35	771·55	772·25	772·20	771·75	772·15	772·35	772·45	771·95	772·50	771·35	771·20	6
7	771·20	771·65	772·35	772·30	772·15	772·25	772·35	772·50	771·85	772·50	771·25	771·15	7
8	771·20	771·55	772·25	772·55	772·15	772·25	772·05	772·55	772·05	772·55	771·30	771·10	8
9	771·25	771·55	772·25	772·20	772·20	772·25	772·25	772·45	772·15	772·55	771·30	771·10	9
10	771·25	771·35	772·35	772·35	772·20	772·05	772·15	772·45	772·15	772·50	771·20	771·15	10
11	771·20	771·35	772·45	772·45	772·15	772·15	772·15	772·55	772·15	772·55	771·25	771·15	11
12	771·25	771·15	772·65	772·55	771·95	772·25	772·25	772·35	772·25	772·75	771·35	771·10	12
13	771·25	771·15	772·65	772·65	771·85	772·25	772·25	772·35	772·20	772·75	771·40	771·10	13
14	771·25	771·45	772·75	772·25	771·75	772·25	772·15	772·45	772·15	772·65	771·35	771·10	14
15	771·35	771·15	772·45	772·25	772·20	772·20	771·75	772·55	772·20	772·75	771·35	771·05	15
16	771·45	771·50	772·35	772·25	772·15	772·25	772·15	772·35	772·15	772·55	771·25	771·05	16
17	771·55	772·15	772·35	772·25	772·20	771·85	772·15	771·95	772·20	772·75	771·35	771·10	17
18	771·55	772·25	772·25	772·25	772·25	772·25	772·25	771·85	772·15	772·75	771·35	771·05	18
19	771·55	772·35	772·35	772·20	772·25	772·20	772·15	771·95	772·25	772·55	771·25	770·95	19
20	771·75	772·50	772·45	772·45	772·15	772·25	772·45	772·05	772·25	772·95	771·25	770·95	20
21	771·75	772·45	772·65	772·20	772·20	772·25	772·25	772·05	772·15	772·75	771·30	770·85	21
22	771·80	772·75	772·25	772·25	772·25	772·15	772·20	771·95	772·25	772·65	771·30	770·85	22
23	771·75	772·95	772·25	772·15	772·25	772·20	772·15	771·85	772·15	772·60	771·25	770·85	23
24	771·75	772·35	772·35	772·25	772·25	772·10	772·25	771·95	.....	772·25	771·25	770·85	24
25	771·75	772·45	772·20	772·20	772·20	.....	772·25	771·95	.....	772·15	771·25	770·85	25
26	771·85	772·65	772·25	772·15	772·25	.....	772·35	771·85	.....	771·95	771·30	770·75	26
27	771·25	772·25	772·20	772·20	772·15	.....	772·25	771·95	772·15	771·85	771·25	770·75	27
28	771·75	772·85	772·25	772·15	772·20	.....	772·45	772·05	772·20	771·85	771·20	770·75	28
29	771·75	772·75	772·20	772·20	772·25	772·25	772·25	772·05	772·25	771·75	771·15	770·75	29
30	771·85	772·55	772·25	771·85	772·20	772·20	772·45	772·10	772·20	771·75	.....	770·75	30
31	.....	772·25	.....	772·15	772·25	.....	772·45	.....	772·15	771·55	.....	770·75	31

ELEVATIONS of Ottawa River at Mattawa, Ont., during the year 1911–12.

TABLE No. 9.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	493·70	498·90	501·80	497·80	494·50	493·80	493·10	493·80	495·10	495·40	494·20	494·10	1
2	493·70	499·80	501·70	497·70	494·40	493·80	493·10	493·90	495·10	495·40	494·20	494·20	2
3	493·70	500·20	501·50	497·60	494·40	493·70	493·00	493·90	495·10	495·30	494·20	494·20	3
4	493·60	500·60	501·30	497·30	494·40	493·70	493·10	493·80	495·00	495·30	494·10	494·20	4
5	493·60	505·10	501·10	497·00	494·40	493·70	493·00	493·80	495·05	495·30	494·10	494·20	5
6	493·60	505·50	500·80	496·80	494·40	493·70	493·00	493·80	495·00	495·30	494·00	494·20	6
7	493·60	504·90	500·70	496·70	494·40	493·70	493·00	493·80	495·00	495·30	494·00	494·20	7
8	493·60	504·40	500·50	496·60	491·30	493·70	493·00	493·90	494·90	495·20	494·00	494·20	8
9	493·70	504·10	500·30	496·40	494·20	493·70	492·90	493·90	494·90	495·10	493·90	494·20	9
10	493·70	503·80	500·10	496·40	494·10	493·60	492·90	493·90	495·00	495·00	493·90	494·20	10
11	493·70	503·50	499·90	496·20	494·00	493·60	492·90	494·00	495·10	495·00	493·90	494·20	11
12	493·70	503·30	499·70	496·00	493·90	493·60	493·00	494·00	495·20	494·90	493·80	494·20	12
13	493·70	503·10	499·60	495·90	493·90	493·60	493·00	494·30	495·30	494·70	493·80	494·20	13
14	493·70	503·00	499·40	495·80	493·90	493·60	493·10	494·40	495·40	494·70	493·70	494·20	14
15	493·80	502·90	499·20	495·70	493·90	493·60	493·00	494·50	495·50	494·70	493·70	494·20	15
16	493·80	502·80	499·00	495·60	493·90	493·50	493·00	494·60	495·50	494·70	493·80	494·20	16
17	494·00	502·70	498·80	495, 50	494·00	493·50	492·90	494·70	495·50	494·70	493·80	494·10	17
18	494·30	502·60	498·80	495·30	494·00	493·50	492·90	494·80	195·60	494·70	493·80	494·10	18
19	494·50	502·50	498·70	495·10	494·00	493·50	492·80	494·80	495·50	494·70	493·80	494·10	19
20	494·80	502·40	489·60	494·90	494·10	493·50	492·80	494·90	495·50	494·70	493·80	494·10	20
21	495·10	502·50	498·60	494·80	494·10	493·40	492·80	495·00	495·50	494·70	493·90	494·10	21
22	495·30	502·50	498·70	494·70	494·10	493·40	492·80	495·10	495·50	494·70	493·90	494·10	22
23	495·50	502·50	498·80	494·60	494·10	493·40	492·90	495·00	495·60	494·70	493·90	494·10	23
24	495·70	502·50	498·90	494·60	494·60	493·30	492·80	495·10	495·60	494·60	493·90	494·00	24
25	495·90	502·50	498·90	494·60	494·60	493·30	493·20	495·10	495·60	494·60	493·90	494·00	25
26	496·30	502·50	498·70	494·50	494·60	493·30	493·10	495·10	495·60	494·50	494·00	493·90	26
27	496·60	502·40	498·60	494·50	493·90	493·30	493·20	495·10	495·60	494·50	494·10	493·90	27
28	497·30	502·30	498·40	494·40	493·90	493·30	493·30	495·20	495·60	494·40	494·10	493·90	28
29	497·70	502·20	498·20	494·40	493·90	493·20	493·50	495·20	495·50	494·40	494·10	493·80	29
30	498·20	502·00	498·00	494·40	493·90	493·20	493·60	495·20	495·50	494·40	.....	493·70	30
31	.....	501·90	.....	494·40	493·80	.....	493·70	.....	495·40	494·30	.....	493·60	31

Elevations of Lake Nipissing at North Bay, during the year 1911–12.

Table No. 10.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	637·80	640·90	642·90	642·00	640·70	639·70	638·80	638·40	638·50	639·00	638·80	638·40	1
2	637·80	641·10	642·80	641·90	640·60	640·00	638·80	638·50	638·50	639·00	638·80	638·40	2
3	637·80	641·20	642·80	641·90	640·60	639·60	638·70	638·40	638·50	639·00	638·80	638·40	3
4	637·80	641·30	642·60	642·00	640·60	639·60	639·20	638·40	638·50	639·00	638·70	638·30	4
5	637·80	641·50	642·50	641·90	640·50	639·50	638·80	638·40	638·50	639·00	638·70	638·30	5
6	637·80	641·60	642·70	641·80	640·50	639·50	638·80	638·30	638·40	639·00	638·70	638·30	6
7	637·80	641·70	642·60	641·70	640·40	639·40	638·80	638·80	638·40	638·90	638·70	638·30	7
8	637·80	641·80	642·60	641·70	640·50	639·40	638·70	638·40	638·40	638·90	638·70	638·30	8
9	637·90	641·80	642·60	641·60	640·60	639·40	638·70	638·40	638·40	638·90	638·70	638·30	9
10	637·90	641·90	642·60	641·60	640·50	639·30	638·70	638·40	638·50	638·90	638·70	638·20	10
11	637·90	642·20	642·60	641·80	640·40	639·30	638·70	638·40	638·50	638·90	638·60	638·20	11
12	638·00	642·30	642·50	641·70	640·40	639·40	638·60	639·00	638·60	638·90	638·60	638·20	12
13	638·20	642·30	642·70	641·50	640·30	639·40	638·60	639·00	638·70	638·90	638·60	638·20	13
14	638·40	642·30	642·60	641·30	640·30	639·30	638·60	638·60	638·80	638·90	638·60	638·10	14
15	638·60	642·30	642·60	641·50	640·30	639·30	638·60	638·50	638·80	638·90	638·50	638·10	15
16	638·80	642·40	642·50	641·30	640·20	639·30	638·60	638·50	638·90	638·90	638·50	638·10	16
17	639·00	642·40	642·50	641·20	640·30	639·20	638·60	638·40	638·90	638·90	638·50	638·10	17
18	639·20	642·40	642·40	641·20	640·30	639·20	638·50	638·70	638·90	638·90	638·50	638·10	18
19	639·30	642·50	642·40	641·30	640·20	639·30	638·50	638·40	638·90	638·90	638·50	638·10	19
20	639·40	642·50	642·40	641·10	640·20	639·20	638·50	638·40	638·90	638·90	638·50	638·10	20
21	639·60	642·50	642·40	641·20	640·20	639·20	638·50	638·40	638·90	638·90	638·50	638·00	21
22	639·80	642·50	642·30	641·10	640·10	639·10	638·40	638·40	638·90	638·90	638·50	638·00	22
23	639·90	642·60	642·30	641·10	640·10	639·10	638·50	638·40	638·90	638·90	638·50	638·00	23
24	640·00	642·60	642·30	641·70	640·00	639·00	638·50	638·40	638·90	638·90	638·50	638·00	24
25	640·10	642·60	642·20	640·90	639·90	639·00	639·00	638·40	639·00	638·90	638·50	637·90	25
26	640·20	642·70	642·20	640·90	639·90	639·00	638·50	638·50	639·00	638·90	638·50	637·90	26
27	640·30	642·70	642·20	640·90	639·90	638·90	638·50	638·50	639·00	638·90	638·50	637·90	27
28	640·40	642·80	642·40	640·80	640·00	639·10	639·00	638·50	639·00	638·80	638·50	637·90	28
29	640·50	642·80	642·10	640·80	639·80	638·80	639·00	638·50	639·00	638·80	638·40	637·90	29
30	640·70	642·80	642·00	640·80	639·70	638·80	638·40	638·50	639·00	638·80	.....	637·90	30
31	.....	642·90	.....	640·70	639·70	.....	638·40	.....	639·00	638·80	.....	637·80	31

Elevations of Ottawa River at Klock's Station, during the year 1911–12.

Table No. 11.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	476·65	486·35	488·75	484·05	478·35	477·55	476·50	477·30	479·45	.....	481·25	480·75	1
2	476·55	486·95	488·55	483·95	478·45	477·55	476·45	477·35	479·35	.....	481·05	480·85	2
3	476·55	487·25	488·35	483·55	478·35	477·55	476·40	477·65	479·25	.....	480·85	480·85	3
4	476·50	488·75	488·15	483·45	478·45	477·50	476·35	477·65	479·25	.....	480·85	480·85	4
5	476·15	493·05	487·75	482·95	478·45	477·45	476·30	477·50	479·25	.....	480·80	480·85	5
6	476·05	492·35	487·55	482·65	478·35	477·40	476·15	477·45	479·20	.....	480·80	480·85	6
7	476·05	491·95	487·15	482·35	478·35	477·35	476·05	477·45	479·15	.....	480·75	480·80	7
8	476·05	491·55	486·95	482·05	478·20	477·30	476·05	477·45	479·15	.....	480·75	480·60	8
9	476·10	491·20	486·55	481·75	477·85	477·25	476·05	477·55	479·15	.....	480·75	480·60	9
10	476·15	490·95	486·35	481·35	477·85	477·20	476·05	477·70	479·15	.....	480·70	479·25	10
11	476·35	490·75	486·15	481·05	477·75	477·20	476·05	477·75	479·15	.....	480·70	479·25	11
12	476·35	490·55	485·95	480·85	477·65	477·20	476·05	477·85	479·45	.....	480·55	479·15	12
13	476·75	490·55	485·90	480·70	477·65	477·20	476·25	477·95	479·55	.....	480·55	479·15	13
14	477·35	490·25	485·85	480·35	477·70	477·15	476·25	478·30	479·65	.....	480·55	479·15	14
15	477·65	489·85	485·05	480·25	477·70	477·10	476·25	478·55	479·70	.....	480·55	479·10	15
16	477·75	489·85	484·85	480·05	477·70	477·05	476·25	478·80	479·90	.....	480·55	479·05	16
17	478·05	489·80	484·75	479·75	477·85	477·00	476·25	478·75	479·95	.....	480·55	479·75	17
18	478·15	489·60	484·70	479·85	477·85	476·85	476·05	478·95	480·00	.....	480·45	479·75	18
19	478·55	489·40	484·65	479·65	477·90	476·80	475·95	479·05	479·95	.....	480·45	479·65	19
20	479·05	489·25	484·65	479·25	477·85	476·75	475·95	479·15	479·90	.....	480·45	479·55	20
21	479·15	489·20	486·65	479·05	477·80	476·70	475·95	479·25	479·90	.....	480·45	479·50	21
22	479·55	489·25	484·65	478·55	477·80	476·65	476·00	479·25	479·90	.....	480·50	479·35	22
23	479·75	489·25	484·75	478·45	477·75	476·65	476·05	479·30	479·95	.....	480·45	479·25	23
24	480·75	489·25	484·75	478·55	477·75	476·65	476·20	479·30	480·05	.....	480·45	479·25	24
25	481·15	489·25	484·75	478·65	477·70	476·65	476·35	479·40	480·15	.....	480·45	479·05	25
26	482·05	489·25	484·75	478·65	477·65	476·65	476·45	.....	480·15	.....	480·45	479·05	26
27	482·85	489·25	484·75	478·55	477·65	476·60	476·65	479·30	480·10	.....	480·45	479·00	27
28	483·50	489·15	484·75	478·50	477·65	476·50	476·65	479·40	479·95	.....	480·60	478·65	28
29	484·15	489·05	484·65	478·45	477·65	476·50	476·85	479·45	479·85	.....	480·65	478·45	29
30	485·15	488·95	484·15	478·35	477·60	476·50	477·05	479·55	479·75	.....	.....	478·15	30
31	.....	488·85	.....	478·30	477·60	.....	477·25	.....	.....	.....	.....	478·05	31

ELEVATIONS of Petawawa River at Petawawa, Ont., during the year 1911–12.

TABLE No. 12.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	437·60	439·80	440·00	439·80	440·10	439·20	439·30	438·10	438·00	438·00	438·20	437·90	1
2	437·60	440·00	439·90	439·80	440·10	439·20	439·20	438·00	438·00	438·00	438·30	437·90	2
3	437·60	440·20	439·90	439·90	440·20	439·10	438·80	438·10	438·00	438·10	438·50	437·90	3
4	437·60	440·20	439·90	440·10	440·10	439·10	438·90	438·00	437·90	438·00	438·20	437·90	4
5	437·70	440·50	439·90	440·10	440·10	439·10	439·50	438·00	437·80	438·10	438·20	437·80	5
6	437·70	440·60	440·00	440·30	440·00	439·10	438·80	438·00	437·80	438·10	438·10	437·90	6
7	437·80	440·70	439·90	440·30	440·00	439·00	438·60	438·10	437·90	438·20	438·10	437·80	7
8	437·90	440·70	439·90	440·30	440·00	439·10	439·10	438·00	437·90	438·20	438·20	437·80	8
9	437·80	440·60	439·80	440·30	440·10	439·00	438·80	437·90	437·80	438·30	438·10	437·80	9
10	437·80	440·50	439·80	440·10	440·20	438·90	438·60	437·90	437·90	438·20	438·10	437·90	10
11	438·00	440·50	439·80	439·80	439·90	438·90	438·90	437·90	437·90	438·20	438·10	437·90	11
12	438·10	440·60	439·90	439·90	439·90	439·00	439·10	438·00	437·90	438·10	438·10	438·00	12
13	438·30	440·60	439·90	440·00	439·80	439·30	438·80	437·90	438·00	438·10	438·00	437·90	13
14	438·60	440·50	440·00	440·00	439·80	439·30	438·60	437·90	438·00	438·10	438·00	437·90	14
15	439·10	440·50	440·00	440·10	439·60	439·00	438·50	437·90	438·00	438·00	437·90	438·00	15
16	439·40	440·40	440·10	440·10	439·60	438·90	438·60	438·00	437·90	438·00	438·00	438·00	16
17	439·60	440·40	440·10	440·20	439·50	438·90	438·90	438·00	437·90	438·10	437·90	438·00	17
18	439·80	440·40	440·10	440·20	439·60	438·90	438·50	437·90	437·90	438·10	437·90	438·00	18
19	439·80	440·30	440·20	440·40	439·80	439·00	438·50	437·90	437·90	438·20	437·90	437·90	19
20	439·90	440·30	440·40	440·90	439·60	438·90	438·60	437·90	437·80	438·10	438·00	437·90	20
21	440·00	440·40	440·50	440·60	439·50	438·80	438·40	437·90	437·80	438·10	437·90	438·00	21
22	439·90	440·30	440·60	440·30	439·30	437·10	438·40	438·00	437·90	438·20	437·90	438·00	22
23	439·90	440·30	440·10	440·30	439·30	437·10	438·60	438·00	437·80	438·20	437·90	437·90	23
24	439·90	440·20	440·10	440·30	439·30	436·90	438·40	438·00	437·80	438·30	437·90	437·90	24
25	439·80	440·20	440·00	440·40	439·20	439·30	438·40	437·90	437·80	438·30	437·90	438·00	25
26	439·80	440·10	439·90	440·20	439·20	439·30	438·50	437·90	437·90	438·20	438·00	438·00	26
27	439·70	440·10	439·80	440·20	439·20	440·50	438·40	437·80	437·90	438·20	438·00	438·10	27
28	439·70	440·10	439·60	440·20	439·50	439·30	438·30	437·80	438·00	438·20	438·00	438·10	28
29	439·80	440·00	439·60	440·20	439·50	438·80	438·30	437·90	438·00	438·10	437·90	438·00	29
30	439·80	440·10	439·70	440·20	439·50	439·10	438·10	437·90	438·10	438·10	.....	438·10	30
31	.....	440·00	.....	440·10	439·30	.....	438·10	.....	438·00	438·20	.....	438·20	31

Elevations of Ottawa River at Pembroke, during the year 1911–12.

Table No. 13.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1													1
2													2
3												365·13	3
4												365·13	4
5												365·13	5
6												365·13	6
7													7
8													8
9													9
10												365·13	10
11												365·13	11
12												365·13	12
13												365·14	13
14												365·15	14
15												365·15	15
16												365·15	16
17												365·15	17
18												365·15	18
19												365·15	19
20												365·14	20
21												365·13	21
22												365·13	22
23												365·13	23
24												364·98	24
25												364·98	25
26												364·98	26
27												364·98	27
28												364·98	28
29											365·13	364·98	29
30												364·98	30
31												364·98	31

ELEVATIONS of the Black River at Waltham, Que., during the year 1911–12.

TABLE No. 14.

Day	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	2·73	6·00	4·60	3·50	2·47	3·14	2·74	3·50	3·40	3·43			1
2	2·73	6·00	4·57	3·30	2·46	3·12	2·74	3·47	3·40	3·44			3
3	2·75	5·89	4·55	3·30	2·44	3·12	2·73	3·47	3·36	3·44			3
4	2·75	5·86	4·30	3·30	2·43	3·10	2·73	3·45	3·36	3·44			4
5	2·80	5·86	4·30	3·30	2·40	3·10	2·70	3·45	3·34	3·42			5
6	2·83	5·70	4·00	3·27	2·38	3·00	2·70	3·43	3·34	3·42			6
7	2·84	5·70	4·00	3·27	2·38	2·80	2·68	3·43	3·34	3·41			7
8	2·86	5·58	3·97	3·24	2·79	2·80	2·67	3·44	3·35	3·40			8
9	2·89	5·56	3·80	3·20	2·79	2·78	2·67	3·45	3·36	3·98			9
10	3·20	5·50	3·76	3·16	2·89	2·77	2·64	3·45	3·36	3·96			10
11	3·36	5·27	3·90	3·14	2·90	2·69	2·64	3·46	3·38	3·96			11
12	3·39	5·00	4·03	3·10	2·93	2·67	2·64	3·46	3·39	3·95			12
13	4·03	4·86	4·04	2·80	2·93	2·67	2·68	3·47	3·40	3·93			13
14	4·40	4·65	4·04	2·80	2·97	2·66	2·72	3·47	3·45	3·93			14
15	4·56	4·63	4·50	2·80	2·98	2·66	2·75	3·47	3·45	3·92			15
16	4·56	4·60	4·50	2·80	3·00	2·65	2·75	3·45	3·47	2·99			16
17	4·56	4·58	4·50	2·78	3·00	2·65	2·76	3·43	3·49	2·99			17
18	4·56	4·58	4·50	2·78	3·00	2·66	2·77	3·43	3·51	2·97			18
19	4·78	4·55	4·39	2·74	3·18	2·68	2·79	3·43	3·52	2·97			19
20	4·79	4·50	4·36	2·70	3·19	2·68	3·00	3·42	3·52	2·97			20
21	4·90	4·30	4·30	2·67	3·20	2·68	3·00	3·42	3·54	2·95			21
22	4·99	4·50	4·00	2·67	3·20	2·69	3·10	3·43	3·54	2·95			22
23	5·43	4·57	3·95	2·62	3·20	2·78	3·30	3·44	3·54	2·94			23
24	5·65	4·78	3·80	2·60	3·20	2·78	3·32	3·44	3·55	2·94			24
25	5·68	4·79	3·59	2·60	3·19	2·78	3·32	3·45	3·55	2·94			25
26	5·72	4·90	3·59	2·58	3·19	2·77	3·36	3·46	3·55	2·94			26
27	5·77	4·90	3·58	2·56	3·17	2·76	3·38	3·48	3·50	2·94			27
28	5·89	4·73	3·57	2·50	3·17	2·76	3·40	3·48	3·48				28
29	5·99	4·70	3·56	2·50	3·16	2·75	3·43	3·45	3·46				29
30	6·00	4·64	3·50	2·47	3·16	2·74	3·50	3·42	3·43				30
31		4·60		2·47	3·15		3·50		3·43				31

Elevations of Coulonge River at High Falls, Que., during the year 1911–12.

Table No. 15.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day
1	103·85	109·40	106·10	104·70	104·05	104·05	103·78	104·50	105·45	104·70	104·40	104·50	1
2	103·80	109·80	106·00	104·70	104·00	104·05	103·80	104·48	105·42	104·60	.....	104·25	2
3	103·82	110·10	105·90	104·75	103·95	103·98	103·80	104·45	105·50	104·60	104·45	.....	3
4	103·88	110·05	106·00	104·80	103·90	103·95	103·83	104·40	105·50	104·55	104·45	104·37	4
5	103·90	109·80	106·00	104·85	103·90	103·90	103·83	104·42	105·30	104·60	.....	.....	5
6	103·90	109·70	106·05	104·95	103·80	103·90	103·85	104·50	105·20	104·55	104·45	.....	6
7	103·95	109·30	106·20	105·00	103·85	103·88	103·83	104·60	105·30	104·57	104·42	104·32	7
8	104·00	109·00	106·30	105·10	103·80	103·82	103·90	104·70	105·50	104·52	104·45	.....	8
9	104·05	108·70	106·35	105·00	103·70	103·80	103·90	104·90	105·60	104·52	104·45	104·27	9
10	104·10	108·40	106·30	104·70	103·70	103·80	103·90	104·95	105·05	104·55	104·45	.....	10
11	104·15	108·20	106·32	104·20	103·55	103·75	103·93	105·05	105·10	104·60	104·47	104·16	11
12	104·20	108·00	106·35	104·20	103·55	103·75	103·90	105·20	105·15	104·60	104·45	.....	12
13	104·40	107·75	106·40	104·10	103·60	103·78	103·95	105·35	105·18	104·55	104·45	104·10	13
14	104·70	107·50	106·40	104·10	103·65	103·80	103·93	105·45	105·20	104·55	.....	.....	14
15	105·00	107·30	106·45	104·20	103·70	103·85	103·95	105·55	105·45	104·50	.....	104·07	15
16	105·20	107·00	106·50	104·20	103·80	103·82	103·97	105·60	105·80	104·50	104·37	.....	16
17	105·22	106·80	106·80	104·25	103·85	103·85	104·05	105·50	105·75	104·55	104·40	.....	17
18	105·30	106·60	106·90	104·30	103·90	103·88	104·10	105·40	105·60	104·55	104·40	103·95	18
19	105·60	106·50	106·90	104·25	103·90	103·90	104·25	105·45	105·20	104·57	104·45	103·90	19
20	105·80	106·35	106·80	104·20	103·85	103·90	104·30	105·45	105·00	.....	104·45	.....	20
21	105·95	106·18	106·60	104·20	104·00	103·85	104·40	105·50	105·05	104·50	104·75	.....	21
22	106·00	106·10	106·40	104·25	104·00	103·85	104·40	105·50	105·10	104·50	104·75	.....	12
23	106·22	106·20	106·10	104·30	103·90	103·88	104·42	105·55	105·20	104·52	104·25	.....	23
24	106·70	106·30	105·80	104·25	103·95	103·85	104·42	105·60	105·25	104·50	104·75	.....	24
25	106·90	106·10	105·60	104·20	103·95	103·85	104·45	105·58	105·20	.....	104·40	.....	25
26	107·30	106·00	105·40	104·15	103·90	103·82	104·48	105·40	105·20	104·47	104·40	.....	26
27	107·90	105·90	105·25	104·10	103·98	103·80	104·50	105·40	105·10	104·45	104·40	.....	27
28	108·40	106·00	105·05	104·10	103·95	103·75	104·50	105·45	105·15	104·45	104·45	.....	28
29	108·80	106·05	105·00	104·20	103·98	103·80	104·55	105·50	105·00	104·45	104·25	.....	29
30	109·00	106·10	104·90	104·10	103·98	103·75	104·55	105·50	104·95	104·45	.....	.....	30
31	.....	106·15	.....	104·10	104·00	.....	.....	.....	104·80	104·40	.....	.....	31

ELEVATIONS of Ottawa River at La Passe, during the year 1911–12.

TABLE No. 16

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	.....	.....	.....	.....	.....	.....	342·40	342·60	344·60	346·25	344·55	344·10	1
2	.....	.....	.....	.....	.....	.....	342·40	342·65	344·60	346·15	344·55	344·10	1
3	.....	.....	.....	.....	.....	.....	342·35	342·75	344·70	346·10	344·50	.....	3
4	.....	.....	.....	.....	.....	.....	342·45	342·85	344·75	346·00	.....	344·20	4
5	.....	.....	.....	.....	.....	.....	342·45	342·90	344·90	345·95	344·45	344·25	5
6	.....	.....	.....	.....	.....	.....	342·45	342·95	345·05	345·75	344·45	344·25	6
7	.....	.....	.....	.....	.....	.....	342·40	343·05	345·35	.....	344·45	344·30	7
8	.....	.....	.....	.....	.....	.....	.....	343·15	345·55	345·65	344·35	344·30	8
9	.....	.....	.....	.....	.....	.....	342·40	343·35	345·55	345·55	344·40	344·30	9
10	.....	.....	.....	.....	.....	.....	342·40	343·45	345·40	345·45	344·40	.....	10
11	.....	.....	.....	.....	.....	.....	342·35	343·55	345·25	345·40	.....	344·35	11
12	.....	.....	.....	.....	.....	.....	342·35	343·60	345·15	345·35	344·15	344·35	12
13	.....	.....	.....	.....	.....	.....	342·25	343·65	345·05	345·35	344·15	344·35	13
14	.....	.....	.....	.....	.....	.....	342·25	343·75	345·05	.....	344·10	344·35	14
15	.....	.....	.....	.....	.....	.....	342·20	343·85	345·05	345·20	344·10	344·35	15
16	.....	.....	.....	.....	.....	.....	342·15	343·95	345·15	345·15	344·05	344·35	16
17	.....	.....	.....	.....	.....	.....	342·15	343·95	345·20	345·10	344·05	.....	17
18	.....	.....	.....	.....	.....	.....	342·35	344·05	345·05	345·05	.....	344·40	18
19	.....	.....	.....	.....	.....	.....	342·45	344·20	344·95	345·00	344·00	344·40	19
20	.....	.....	.....	.....	.....	.....	342·45	344·35	344·85	345·00	344·00	344·40	20
21	.....	.....	.....	.....	.....	.....	342·55	344·45	344·75	.....	344·00	344·40	21
22	.....	.....	.....	.....	.....	.....	342·55	344·45	344·65	344·95	344·05	344·40	22
23	.....	.....	.....	.....	.....	.....	342·60	344·45	344·65	344·95	344·05	344·40	23
24	.....	.....	.....	.....	.....	.....	342·60	344·45	344·80	344·90	344·05	.....	24
25	.....	.....	.....	.....	.....	.....	342·55	344·45	344·95	344·85	.....	344·30	25
26	.....	.....	.....	.....	.....	.....	342·55	344·50	345·05	344·85	344·05	344·30	26
27	.....	.....	.....	.....	.....	.....	342·45	344·55	345·15	344·80	344·05	344·30	27
28	.....	.....	.....	.....	.....	342·55	342·45	344·55	345·25	.....	344·05	344·25	28
29	.....	.....	.....	.....	.....	342·55	342·45	344·55	345·35	344·65	344·05	344·20	29
30	.....	.....	.....	.....	.....	342·45	342·50	344·60	345·65	344·65	.....	344·15	30
31	.....	.....	.....	.....	.....	.....	342·50	.....	.....	344·60	.....	.....	31

ELEVATIONS of the Bonnechère River at Renfrew, during the year 1911–12.

TABLE No. 17

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	322·80	324·50	324·80	324·80	323·30	322·40							1
2	322·60	325·20	324·80	324·80	323·20	322·60							2
3	323·20	324·90	324·80	324·60	323·00	323·10							3
4	323·30	324·80	324·90	324·50	323·00	323·00							4
5	323·40	324·80	324·70	324·40	322·90	323·00							5
6	324·40	324·70	324·80	324·40	323·00	322·90							6
7	324·90	324·80	324·70	324·20	322·80	322·80							7
8	325·00	324·60	324·80	324·20		322·80							8
9	324·80	324·60	324·60	324·40		323·00							9
10	325·20	324·50	324·70	324·20									10
11	325·00	324·60	325·00	324·20									11
12	324·70	324·70	325·20	324·10									12
13	324·80	324·50	325·40	324·00	323·00								13
14	325·40	324·60	325·20	324·00	322·80								14
15	325·40	324·50	325·20	323·90	322·80								15
16	325·20	324·50	325·20	324·10	322·90								16
17	325·00	324·50	325·00	324·00	323·00								17
18	324·80	324·60	325·10	324·10	322·90								18
19	324·80	324·70	325·00	324·00	323·00								19
20	324·80	324·60	324·90	323·90	323·20								20
21	324·80	324·60	324·90	323·80	322·80								21
22	324·50	324·70	324·90	323·80	323·00								22
23	324·80	325·20	324·80	323·70	323·00								23
24	324·60	325·30	324·80	323·70	323·20								24
25	324·90	325·20	324·90	323·60	323·00								25
26	324·70	324·90	324·80	323·60	322·80								26
27	324·50	324·90	324·80	323·40	323·20								27
28	324·50	325·00	325·00	323·40	323·00								28
29	324·50	324·90	324·80	323·20	323·10								29
30	324·60	324·90	324·70	323·30	322·60								30
31		324·90		323·30	322·40								31

*Gauge readings were discontinued owing to the water level being entirely controlled by the manipulation of the Electric Power's Co.'s. gates.

ELEVATIONS of Calabogie Lake at Calabogie, Ont., during the year 1911–12.

TABLE No. 18

Day.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	500·25	504·95	503·95	503·15	501·55	500·75	500·15	500·55	501·15	502·05	501·55	501·05	1
2	500·25	504·95	503·85	503·05	501·45	500·65	500·15	500·55	501·15	501·95	501·45	501·05	2
3	500·25	504·95	503·75	503·05	501·45	500·65	500·15	500·55	501·15	501·95	501·45	501·05	3
4	500·35	504·85	503·65	502·95	501·45	500·65	500·15	500·55	501·15	501·95	501·45	501·05	4
5	500·35	504·85	503·65	502·85	501·45	500·55	500·15	500·45	501·15	501·85	501·45	501·05	5
6	500·45	504·75	503·65	502·75	501·35	500·55	500·15	500·45	501·25	501·85	501·45	500·95	6
7	500·45	504·75	503·65	502·75	501·35	500·55	500·25	500·45	501·25	501·85	501·35	500·95	7
8	500·65	504·65	503·55	502·65	501·35	500·45	500·25	500·45	501·25	501·85	501·35	500·95	8
9	500·95	504·65	503·55	502·65	501·35	500·45	500·25	500·55	501·25	501·75	501·35	500·95	9
10	501·25	504·55	503·65	502·65	501·25	500·45	500·25	500·55	501·35	501·75	501·35	500·95	10
11	501·65	504·55	503·65	502·55	501·25	500·35	500·25	500·55	501·35	501·75	501·35	500·85	11
12	502·05	504·45	503·75	502·55	501·25	500·25	500·35	500·55	501·45	501·65	501·25	500·85	12
13	502·45	504·35	503·85	502·45	501·25	500·15	500·35	500·55	501·55	501·65	501·25	500·85	13
14	502·95	504·35	503·95	502·35	501·25	500·15	500·35	500·55	501·65	501·65	501·25	500·85	14
15	503·95	504·25	503·95	502·25	501·25	500·05	500·35	500·65	501·85	501·65	501·25	500·85	15
16	504·95	504·25	504·05	502·25	501·15	500·05	500·45	500·65	502·05	501·65	501·15	500·85	16
17	505·15	504·15	504·05	502·25	501·15	500·05	500·45	500·65	502·15	501·65	501·15	500·85	17
18	505·05	504·05	504·05	502·15	500·15	500·05	500·45	500·75	502·15	501·65	501·15	500·95	18
19	504·95	504·05	503·85	502·15	501·15	500·05	500·55	500·85	502·15	501·65	501·15	500·95	19
20	505·05	504·15	503·75	502·15	501·15	500·05	500·55	500·85	502·25	501·65	501·15	500·95	20
21	505·25	504·15	503·65	502·15	501·15	500·05	500·65	500·85	502·25	501·65	501·15	500 95	21
22	505·25	504·05	503·65	502·05	501·05	500·05	500·65	500·85	502·25	501·65	501·15	500 95	22
23	505·25	503·95	503·55	502·05	501·05	500·15	500·65	500·85	502·25	501·65	501·15	500 95	23
24	505·25	504·15	503·45	501·95	500·95	500·15	500·65	500·95	502·25	501·65	501·15	500·85	24
25	505·15	504·25	503·45	501·95	500·95	500·15	500·65	500·95	502·15	501·65	501·15	500·85	25
26	505·15	504·35	503·55	501·85	500·85	500·15	500·65	500·95	502·15	501·55	501·15	500·85	26
27	505·25	504·25	503·65	501·75	500·85	500·15	500·65	501·05	502·15	501·55	501·15	500·85	27
28	505·15	504·25	503·55	501·75	500·85	500·15	500·65	501·05	502·15	501·55	501·15	500·85	28
29	505·05	504·15	503·45	501·65	500·85	500·15	500·65	501·05	502·05	501·55	501·15	500·85	29
30	505·05	504·15	503·25	501·65	500·75	500·15	500·55	501·05	502·05	501·55	.....	500·85	30
31	.....	504·05	.....	501·55	500·75	.....	500·55	.....	502·05	501·55	.....	500·85	31

ELEVATIONS of Madawaska River, at Clay Bank Bridge, during the year 1911–12.

TABLE NO 19.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	260·15	263·20	262·40	261·95	260·65	260·30	259·85	260·20	260·45	261·15	260·95	261·10	1
2	260·15	263·20	262·20	261·80	260·65	260·30	259·85	260·20	260·45	261·15	260·95	261·10	2
3	260·15	263·20	262·15	261·80	269·55	260·30	259·85	260·30	260·45	261·15	260·95	260·95	3
4	260·15	263·15	262·15	261·46	260·55	260·30	259·85	260·30	260·45	261·15	260·95	260·95	4
5	260,15	263·15	262·15	261·46	260·45	260·30	259·85	260·30	260·45	261·15	260·95	260·95	5
6	260·20	263·15	262·05	261·40	260·45	260·30	259·85	260·30	260·45	261·15	260·95	260·95	6
7	260·20	263·15	262·05	261·40	260·55	260·30	259·85	260·30	260·45	261·15	260·95	260·90	7
8	260·20	263·15	261·95	261·40	260·55	260·20	259·85	260·30	260·45	261·15	260·95	260·90	8
9	260,45	262·90	261·95	261·30	260·55	260·20	259·85	260·30	260·45	261·15	260·95	260·90	9
10	260·70	262·90	261·95	261·20	260·55	260·15	259·85	260·30	260·45	261·15	260·95	240·90	10
11	260·95	262·80	262·05	260·95	260·55	260·05	259·95	260·30	260·55	261·15	260·95	260·90	11
12	261·21	262·80	262·15	261·05	260·55	260·05	259·95	260·30	260·55	261·15	260·95	260·90	12
13	261·45	252·80	262·20	261·05	260·45	259·95	259·95	260·30	260·55	261·15	260·95	260·90	13
14	261·90	262·70	262·30	260·95	260·55	259·85	259·95	260·30	260.65	261·05	260·95	260·90	14
15	262·55	262·70	262·40	260·85	260·55	259·85	260·05	260·20	260·65	261·05	260·95	260·90	15
16	263·20	262·70	262·40	260·95	260·45	259·85	260·05	260·20	260·65	261·05	260·95	260·90	16
17	263·40	262·40	262·40	260·95	260·45	259·85	260·05	260·20	260·70	261·05	260·95	260·90	17
18	263·45	262·40	262·30	261·05	260·45	259·80	260·10	260·20	260,75	261·05	260·95	260·90	18
19	263·45	262·40	263·30	261·10	260·45	259·70	260·10	260·30	260·80	261·05	260·90	260·90	19
20	263·40	262·30	262·30	261·05	260·45	259·70	260·10	260·30	260·80	261·05	260·90	260·90	20
21	263·55	262·30	262·20	260·95	260·45	259·70	260·10	260·30	260·95	261·05	260·90	260·80	21
22	263·65	262·40	262·20	260·95	260·45	259·60	260·20	260·30	261·05	260·95	260·95	260·80	22
23	263·65	262·55	262·15	260·85	260·45	259·60	260·20	260·30	261·10	260·95	260·95	260·80	23
24	263·55	262·80	262·05	260·85	260·40	259·85	260·30	260·30	261·15	260·90	260·95	260·80	24
25	263·55	262·65	261·95	260·85	260·40	259·95	260·30	260·30	261·15	260·90	261·00	260·80	25
26	263·55	262·65	261·95	260·80	260·40	259·95	260·30	260·30	261·15	260·80	261·00	260·80	26
27	263·55	262·55	261·95	260·80	260·40	259·85	260·20	269·30	261·15	260·80	261·00	260·80	27
28	263·45	262·55	261·95	260·70	260·40	259·85	260·20	260·30	261·15	260·80	261·00	260·70	28
29	263·45	262·45	261·95	260·70	260·40	259·85	260·20	260·40	261·15	260·90	261·00	260·70	29
30	263·45	262·40	261·95	260·70	260·40	259·85	260·20	260·40	261·15	260·95	.....	260·70	30
31	.....	262·40	.....	260·65	260·30	.....	260·20	.....	261·15	260·95	.....	260·65	31

ELEVATIONS of Ottawa River at Britannia Bay, Ont., during the year 1911–12.

TABLE No. 20

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	189·80	194·05	195·05	192·95	190·85	190·40	189·90	190·00	191·45	191·10	190·50	190·05	1
2	189·80	194·35	194·95	193·05	190·75	190·45	189·85	190·00	191·50	191·25	190·50	190·05	2
3	189·85	194·65	194·95	193·05	190·80	190·45	189·90	190·00	191·50	191·30	190·45	190·10	3
4	189·80	194·75	194·95	192·90	190·80	190·55	189·95	190·05	191·50	191·35	190·45	190·10	4
5	189·80	195·05	194·70	192·75	190·85	190·55	189·90	190·05	191·30	191·40	190·45	190·10	5
6	189·85	195·25	194·55	192·70	190·85	190·55	189·90	190·10	191·25	191·35	190·40	190·05	6
7	190·05	195·55	194·50	192·55	190·95	190·50	189·90	190·15	191·25	191·15	190·35	190·10	7
8	190·35	195·95	194·45	192·45	190·85	190·45	189·90	190·35	191·30	191·10	190·35	190·10	8
9	190·65	196·25	194·45	192·35	190·85	190·40	189·85	190·30	191·35	191·00	190·35	190·15	9
10	191·00	196·35	194·30	192·25	190·85	190·35	189·85	190·30	191·40	191·00	190·30	190·15	10
11	191·20	196·20	194·25	192·05	190·85	190·40	189·85	190·45	191·45	191·00	190·25	190·15	11
12	191·35	196·10	194·20	192·15	190·75	190·45	189·85	190·50	191·50	190·85	190·30	190·15	12
13	191·45	196·05	194·25	191·80	190·80	190·35	189·80	190·70	191·55	190·90	190·25	190·15	13
14	191·55	195·75	194·25	191·70	190·75	190·25	189·80	190·80	191·60	190·85	190·20	190·15	14
15	191·75	195·65	194·15	191·60	190·55	190·30	189·75	190·85	191·65	190·85	190·15	190·20	15
16	191·95	195·55	194·05	191·55	190·75	190·20	189·80	190·90	191·70	190·85	190·15	190·20	16
17	192·15	195·45	194·00	191·45	190·70	190·15	189·80	190·90	191·75	190·75	190·15	190·20	17
18	192·25	195·35	193·95	191·45	190·70	190·15	189·80	190·95	191·80	190·70	190·10	190·25	18
19	192·25	195·25	193·85	191·35	190·75	190·20	189·75	191·10	191·85	190·75	190·05	190·25	19
20	192·40	195·25	193·75	191·30	190·70	190·20	189·75	191·15	191·85	190·75	190·15	190·20	20
21	192·55	195·25	193·65	195·25	190·70	190·15	189·75	191·10	191·90	190·75	190·10	190·20	21
22	192·65	195·15	193·45	191·15	190·65	190·15	189·75	191·15	191·85	190·80	190·20	190·20	22
23	192·80	195·15	193·35	191·15	190·65	190·10	189·80	191·15	191·85	190·75	190·20	190·20	23
24	192·90	195·65	193·25	191·05	190·60	190·05	189·85	191·20	191·85	190·70	190·15	190·20	24
25	192·90	195·55	193·15	190·95	190·50	190·05	189·85	191·30	191·90	190·65	190·15	190·15	25
26	192·85	195·25	193·05	190·85	190·60	190·05	189·90	191·35	191·85	190·60	190·15	190·15	26
27	192·95	195·15	192·95	190·85	190·55	190·05	189·90	191·40	191·80	190·60	190·20	190·20	27
28	193·20	195·05	193·05	190·85	190·60	190·00	189·90	191·45	191·75	190·60	190·15	190·20	28
29	193·45	195·15	193·15	190·80	190·55	189·95	189·95	191·45	191·60	190·60	190·10	190·20	29
30	193·75	195·05	193·05	190·85	190·50	189·95	190·00	191·45	190·30	190·55	.....	190·20	30
31	.....	194·95	.....	190·95	190·45	.....	190·00	.....	190·75	190·55	.....	190·20	31

GAUGE READINGS of Rideau River at Black Rapids, during the year 1911–12.

UPPER SILL. TABLE NO. 21.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	3·0	6·6	6·5	.....	.....	.....	6·4	.....	*	*	*	*	1
2	3·0	6·6	6·4	.....	.....	.....	6·4	.....	.....	.....	.....	.....	2
3	3·0	6·7	6·4	6·6	.....	.....	6·5	.....	.....	.....	.....	.....	3
4	3·2	6·7	6·4	6·6	.....	.....	6·5	.....	.....	.....	.....	.....	4
5	3·6	6·8	6·4	6·6	.....	.....	6·5	6·4	.....	.....	.....	.....	5
6	5·0	6·8	6·4	6·5	.....	.....	6·5	6·5	.....	.....	.....	.....	6
7	7·2	6·7	6·4	6·5	.....	.....	6·5	6·4	.....	.....	.....	.....	7
8	7·6	6·7	6·4	6·5	.....	.....	6·5	6·4	.....	.....	.....	.....	8
9	7·1	6·6	6·4	6·5	.....	.....	6·5	6·5	.....	.....	.....	.....	9
10	8·1	6·6	6·5	6·5	.....	.....	6·5	6·5	.....	.....	.....	.....	10
11	9·0	6·6	6·5	6·5	.....	6·1	6·4	6·4	.....	.....	.....	.....	11
12	9·0	6·6	6·6	6·5	.....	6·1	6·4	.....	.....	.....	.....	.....	12
13	8·6	6·7	6·10	6·5	.....	6·1	6·4	6·5	.....	.....	.....	.....	13
14	8·2	6·7	6·7	6·5	.....	6·1	6·4	6·5	.....	.....	.....	.....	14
15	8·0	6·7	6·6	6·4	.....	6·1	6·4	6·5	.....	.....	.....	.....	15
16	7·1	6·6	6·6	6·4	.....	6·0	6·4	6·0	.....	.....	.....	.....	16
17	7·6	6·6	6·6	.....	.....	6·0	6·4	4·1	.....	.....	.....	.....	17
18	7·2	6·6	6·6	.....	.....	6·0	6·4	4·8	.....	.....	.....	.....	18
19	6·1	6·6	6·6	.....	.....	6·0	6·4	... *	.....	.....	.....	.....	19
20	6·6	6·6	6·6	.....	.....	6·0	6·4	.....	.....	.....	.....	.....	20
21	6·2	6·6	6·6	.....	.....	6·1	6·4	.....	.....	.....	.....	.....	21
22	6·0	6·6	6·5	.....	.....	6·1	6·4	.....	.....	.....	.....	.....	22
23	5·8	6·6	6·6	.....	.....	6·1	6·4	.....	.....	.....	.....	.....	23
24	5·1	6·7	6·7	6·3	.....	6·1	6·4	.....	.....	.....	.....	.....	24
25	5·0	6·6	6·5	6·2	.....	6·1	6·4	.....	.....	.....	.....	.....	25
26	6·6	6·6	6·5	6·1	.....	6·2	6·5	.....	.....	.....	.....	.....	26
27	6·6	6·6	6·5	6·0	.....	6·3	6·5	.....	.....	.....	.....	.....	27
28	6·6	6·6	6·5	6·0	.....	6·3	6·4	.....	.....	.....	.....	.....	28
29	6·6	6·6	6·5	6·0	.....	6·4	.....	.....	.....	.....	.....	.....	29
30	6·6	6·6	6·5	6·1	.....	6·4	.....	.....	.....	.....	.....	.....	30
31	.....	6·4	.....	6·2	.....	.....	.....	.....	.....	.....	.....	.....	31

*Gauge readings were discontinued on the 18th November owing to the observer leaving.

GAUGE READINGS of Rideau River at Black Rapids, during the year 1911.

LOWER SILL. TABLE NO. 22.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	4·0	7·8	7·4	.....	7·4	7·4	7·4	.....	.....	.....	.....	.....	1
2	4·0	7·8	7·4	.....	7·4	7·4	7·4	.....	.....	.....	.....	.....	2
3	4·0	7·8	7·5	7·4	7·4	7·4	7·4	.....	.....	.....	.....	.....	3
4	4·0	7·8	7·4	7·5	7·4	7·4	7·4	.....	.....	.....	.....	.....	4
5	4·0	7·8	7·4	7·5	7·4	7·4	7·4	7·5	.....	.....	.....	.....	5
6	4·0	7·8	7·4	7·4	7·4	7·4	7·4	7·4	.....	.....	.....	.....	6
7	7·0	7·7	7·4	7·4	7·4	7·4	7·4	7·4	.....	.....	.....	.....	7
8	8·4	7·7	7·3	7·4	7·4	7·4	7·4	7·5	.....	.....	.....	.....	8
9	8·10	7·6	7·3	7·4	7·4	7·3	7·4	7·4	.....	.....	.....	.....	9
10	12·0	7·6	7·4	7·4	7·4	7·3	7·4	7·5	.....	.....	.....	.....	10
11	10·6	7·6	7·5	7·4	7·4	7·3	7·4	7·4	.....	.....	.....	.....	11
12	10·6	7·6	7·6	7·4	7·4	7·3	7·5	.....	.....	.....	.....	.....	12
13	9·6	7·8	7·9	7·4	7·4	7·3	7·5	6·5	.....	.....	.....	.....	13
14	8·10	7·6	7·8	7·4	7·4	7·3	7·5	.....	.....	.....	.....	.....	14
15	8·10	7·6	7·6	7·5	7·3	7·3	7·4	.....	.....	.....	.....	.....	15
16	8·4	7·6	7·6	7·5	7·3	7·3	7·4	.....	.....	.....	.....	.....	16
17	7·8	7·6	7·6	.....	7·3	7·3	7·4	.....	.....	.....	.....	.....	17
18	7·0	7·6	7·6	.....	7·2	7·2	7·8	.....	.....	.....	.....	.....	18
19	6·0	7·6	7·6	.....	7·2	7·2	7·4	.....	.....	.....	.....	.....	19
20	5·10	7·6	7·5	.....	7·2	7·2	7·4	.....	.....	.....	.....	.....	20
21	5·6	7·6	7·5	.....	7·2	7·2	7·4	.....	.....	.....	.....	.....	21
22	5·0	7·6	7·5	.....	7·3	7·2	7·4	.....	.....	.....	.....	.....	22
23	4·10	7·6	7·6	.....	7·3	7·3	7·4	.....	.....	.....	.....	.....	23
24	4·4	7·8	7·7	7·5	7·3	7·3	7·3	.....	.....	.....	.....	.....	24
25	4·4	7·7	7·5	7·4	7·3	7·3	7·3	.....	.....	.....	.....	.....	25
26	5·4	7·6	7·5	7·4	7·4	7·5	7·4	.....	.....	.....	.....	.....	26
27	6·0	7·6	7·4	7·2	7·4	7·4	7·4	.....	.....	.....	.....	.....	27
28	7·4	7·6	7·4	7·2	7·4	7·4	7·4	.....	.....	.....	.....	.....	28
29	7·6	7·6	7·4	7·2	7·4	7·4	.....	.....	.....	.....	.....	.....	29
30	7·8	7·6	7·4	7·3	7·4	7·4	.....	.....	.....	.....	.....	.....	30
31	.....	7·6	.....	7·3	7·4	.....	.....	.....	.....	.....	.....	.....	31

Elevations of Ottawa River at Rideau Locks, during the year 1911–12.

Table No. 23.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	130·30	138·47	140·39	135·64	130·55	129·55	128·39	128·55	130·89	133·47	131·39	130·39	1
2	130·30	139·05	140·22	135·64	130·55	129·55	128·39	128·47	130·97	133·47	131·30	130·47	2
3	130·30	139·72	139·97	135·64	130·55	129·47	128·39	128·47	131·14	133·30	131·22	130·47	3
4	130·39	140·47	139·89	135·39	130·47	129·39	128·47	128·47	131·30	132·97	131·14	130·47	4
5	130·39	141·39	139·89	135·22	130·47	129·39	128·39	128·47	131·47	132·89	130·97	130·47	5
6	130·47	141·89	139·89	134·89	130·47	129·39	128·39	128·55	131·47	132·72	130·97	130·47	6
7	130·89	142·05	139·72	134·55	130·39	129·39	128·30	128·72	131·39	132·64	130·97	130·47	7
8	131·80	142·47	139·47	134·39	130·39	129·47	128·14	128·80	131·39	132·47	130·89	130·55	8
9	132·89	142·80	139·22	134·14	130·64	129·30	128·14	128·97	131·22	132·47	130·89	130·55	9
10	134·22	143·14	138·97	133·89	130·80	129·14	128·22	129·14	131·14	132·30	130·80	130·55	10
11	135·22	143·14	138·72	133·55	131·05	129·05	128·30	129·22	130·97	132·22	130·72	130·64	11
12	135·55	142·89	138·47	133·30	131·05	128·97	128·30	129·22	130·89	132·05	130·64	130·64	12
13	135·95	142·47	138·64	133·05	130·97	128·97	128·22	129·30	131·05	131·97	130·64	130·64	13
14	136·30	142·30	138·80	132·72	131·05	128·89	128·22	129·55	131·30	131·97	130·55	130·64	14
15	136·55	142·14	138·80	132·55	131·14	129·05	128·05	129·80	131·39	131·97	130·47	130·64	15
16	136·47	141·95	138·72	132·30	130·80	128·97	128·05	129·89	131·30	131·97	130·39	130·64	16
17	136·22	141·72	138·55	132·22	130·72	128·80	128·22	129·97	131·30	131·89	130·39	130·64	17
18	135·80	141·30	138·47	132·22	130·89	128·80	128·30	130·14	131·22	131·80	130·39	130·72	18
19	135·39	141·05	138·22	132·14	130·72	128·80	128·30	129·89	131·39	131·80	130·47	130·72	19
20	135·05	140·72	137·97	131·97	130·47	128·72	128·30	130·14	131·39	131·80	130·39	130·72	20
21	134·89	140·39	137·72	131·80	130·47	128·80	128·22	130·22	132·97	131·80	130·39	130·72	21
22	135·30	140·14	137·30	131·72	130·30	128·72	128·22	130·30	132·80	131·80	130·39	130·72	22
23	135·30	140·30	137·14	131·47	130·22	128·64	128·22	130·39	132·80	131·80	130·39	130·72	23
24	134·47	140·72	136·80	131·39	130·22	128·64	128·22	130·47	132·64	131·80	130·39	130·72	24
25	135·47	140·80	136·64	131·30	130·22	128·72	128·30	130·47	132·55	131·80	130·39	130·72	25
26	135·64	140·80	136·47	131·14	130·14	128·55	128·39	130·72	132·47	131·80	130·39	130·64	26
27	135·97	140·89	136·30	131·05	130·14	128·55	128·39	130·80	132·64	131·80	130·39	130·64	27
28	136·47	140·89	136·05	130·89	129·97	128·47	128·39	130·89	132·89	131·64	130·39	130·55	28
29	136·97	140·89	135·97	130·80	129·89	128·47	128·05	130·80	132·97	131·47	130·39	130·55	29
30	137·64	140·72	135·80	130·55	129·89	128·47	128·30	130·89	132·89	131·47	.....	130·55	30
31	.....	140·55	.....	130·55	129·89	.....	128·55	.....	133·30	131·47	.....	130·55	31

ELEVATIONS of Gatineau River at Chelsea, Que., during the year 1911–12.

GAUGE BELOW THE FALLS. TABLE No. 24.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	205·05	210·95	211·25	.....	205·90	205·55	204·90	204·80	205·40	205·50	205·80	205·10	1
2	205·05	212·15	211·25	208·10	205·80	205·65	204·85	204·90	205·25	205·50	205·40	205·10	2
3	204·75	212·45	211·20	207·90	205·75	205·55	204·95	204·90	205·30	205·70	205·45	205·10	3
4	204·55	212·65	211·15	207·75	205·65	205·50	204·95	204·90	205·15	205·70	205·40	205·10	4
5	204·75	212·90	211·15	207·65	205·65	205·45	204·90	204·85	205·20	205·60	205·35	205·15	5
6	205·05	213·45	211·20	207·60	205·60	205·35	204·90	204·85	205·20	205·60	205·30	205·10	6
7	205·95	213·45	211·15	207·55	205·55	205·40	204·85	204·90	205·15	206·10	205·30	204·90	7
8	206·35	213·30	211·05	207·50	205·45	205·40	204·80	204·90	205·15	206·00	205·35	204·75	8
9	205·65	212·95	211·05	207·30	205·45	205·45	204·85	204·90	205·15	206·10	205·40	204·50	9
10	205·35	212·95	211·05	207·15	206·95	205·35	204·85	205·00	205·20	206·20	205·50	204·50	10
11	205·50	212·90	211·05	207·05	207·05	205·30	204·90	205·00	205·40	206·10	205·40	204·50	11
12	205·75	212·65	211·05	207·00	207·15	205·15	204·85	205·00	206·05	206·00	205·30	205·00	12
13	205·85	212·70	211·05	206·90	207·45	205·15	204·85	205·00	206·10	206·10	205·25	204·50	13
14	206·25	212·65	211·05	206·85	207·35	205·05	204·85	205·00	206·10	206·00	205·05	204·40	14
15	206·45	212·25	211·05	206·85	207·25	205·10	204·85	205·05	206·15	206·05	205·00	204·40	15
16	208·35	212·15	210·95	206·75	206·95	205·05	204·90	205·10	206·20	206·10	204·90	204·40	16
17	207·75	212·05	210·85	206·60	206·85	205·05	204·90	205·25	206·25	206·10	204·90	204·30	17
18	207·65	211·90	210·75	206·55	206·80	205·00	204·90	205·10	206·30	206·05	204·90	204·30	18
19	207·65	210·80	210·65	206·45	206·65	205·00	204·85	205·15	206·15	206·05	204·90	204·50	19
20	207·75	211·00	210·45	206·40	206·55	204·95	204·90	205·25	206·20	206·10	204·90	204·50	20
21	207·75	211·05	210·25	206·30	206·50	204·95	204·90	205·10	206·10	206·10	204·90	204·60	21
22	207·75	211·10	209·95	206·35	206·25	205·00	204·80	205·00	205·95	206·00	204·95	204·70	22
23	208·05	211·05	209·75	206·60	206·05	204·95	204·75	205·10	206·00	206·10	205·00	204·70	23
24	208·45	211·05	209·65	206·55	205·90	204·95	204·65	205·10	205·95	206·10	205·00	204·65	24
25	208·95	210·95	209·65	206·50	205·75	204·95	204·55	205·10	205·95	205·85	204·90	204·50	25
26	209·30	211·35	209·45	206·25	205·65	204·95	204·55	205·25	205·90	205·60	204·90	204·50	26
27	209·45	211·55	208·95	205·95	205·80	204·95	204·55	205·35	205·80	205·65	205·00	204·55	27
28	209·75	211·65	208·65	206·00	205·75	204·95	204·55	205·50	205·60	205·70	205·05	204·60	28
29	210·05	211·65	208·50	205·95	205·65	205·00	204·55	205·65	205·60	205·70	205·05	204·65	29
30	210·25	211·55	208·35	205·95	205·65	204·95	204·65	205·55	205·60	205·70	.....	204·70	30
31	.....	211·45	.....	205·95	205·55	.....	204·75	.....	205·55	205·75	.....	204·70	31

Elevations of Gatineau River at Chelsea, Que., during the year 1911–12.

Gauge Above the Falls. Table No. 25.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1								237·40	238·30	239·20	240·85	239·10	1
2								237·50	238·35	239·30	240·40	239·10	2
3								237·55	238·40	239·30	240·40	239·20	3
4								237·60	238·10	238·90	240·80	239·00	4
5								237·60	238·05	238·50	240·70	238·75	5
6								237·60	238·00	238·40	240·70	238·20	6
7								237·70	238·00	238·30	240·55	237·80	7
8								237·70	237·95	238·20	240·40	237·50	8
9								237·70	237·95	238·10	240·10	237·30	9
10								237·80	238·15	240·40	240·20	237·25	10
11								237·80	238·15	241·50	239·90	237·20	11
12								237·90	239·00	241·95	239·70	237·20	12
13								238·00	239·05	241·20	239·55	237·20	13
14								238·30	239·05	241·30	239·30	237·10	14
15								238·30	239·10	241·80	239·30	237·10	15
16								238·40	239·15	241·80	239·30	237·20	16
17								238·65	239·20	241·85	239·10	237·20	17
18								238·50	239·30	241·90	238·75	237·25	18
19								238·40	239·20	241·90	238·10	237·25	19
20								238·45	239·25	242·10	238·10	237·45	20
21								238·30	239·00	241·70	238·00	237·50	21
22								238·20	238·95	241·05	237·80	237·60	22
23								238·00	239·00	240·95	237·70	237·65	23
24							237·20	238·15	239·00	240·95	237·75	237·30	24
25							237·15	238·30	239·00	240·70	238·00	237·15	25
26							237·15	238·40	238·95	240·45	238·30	236·90	26
27							237·20	238·40	238·85	240·55	238·80	236·95	27
28							237·20	238·40	238·75	241·20	239·10	237·05	28
29							237·15	238·35	238·80	241·20	239·10	237·10	29
30							237·20	238·25	238·90	241·15	.....	237·15	30
31							237·40	.....	238·95	241·00	.....	237·15	31

ELEVATIONS of Du Lièvre River above Poupore Lock, Que., during the year 1911–12.

TABLE No. 26.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	433·60	439·90	438·50	436·20	434·60	434·80	434·00	434·00	435·20	435·40	434·20	433·90	1
2	433·60	440·30	438·40	436·10	434·60	434·70	434·00	434·00	435·20	435·20	434·20	433·90	2
3	433·60	440·50	438·20	436·00	434·50	434·70	434·00	434·00	435·20	435·10	434·20	433·90	3
4	433·70	440·70	438·20	435·90	434·50	434·70	434·10	434·00	435·20	437·80	134·20	433·80	4
5	433·70	440·90	438·20	435·80	434·50	434·60	434·10	434·00	435·20	434·80	434·20	433·80	5
6	433·80	441·00	438·20	435·70	434·40	434·60	434·30	434·00	435·20	434·70	434·20	433·80	6
7	454·00	440·90	438·10	435·60	434·40	434·50	434·20	434·20	435·10	434·60	434·20	433·80	7
8	434·10	440·80	437·90	435·50	434·40	434·40	434·20	434·20	435·10	434·50	434·20	433·80	8
9	434·20	440·50	437·60	435·40	134·60	434·40	434·10	434·20	435·00	434·40	434·20	433·70	9
10	434·40	440·30	437·40	435·40	434·90	434·40	434·10	434·20	435·00	434·40	434·20	433·70	10
11	434·50	440·00	437·20	435·30	435·20	434·40	434·10	434·20	435·10	434·30	434·20	433·70	11
12	434·60	439·80	437·20	435·20	435·50	434·60	434·10	434·30	435·50	434·30	434·20	433·70	12
13	434·80	439·70	437·60	435·10	435·70	434·40	434·10	434·40	435·60	434·30	434·20	433·70	13
14	435·00	439·50	437·60	435·00	435·80	434·30	434·10	434·50	435·80	434·30	434·20	433·70	14
15	435·60	439·30	437·70	435·00	435·80	434·30	434·10	434·70	435·90	434·30	434·20	433·70	15
16	436·00	439·10	437·90	435·00	435·80	434·30	434·10	434·80	435·90	434·30	434·20	433·70	16
17	436·20	438·90	438·00	134·90	435·70	434·30	434·10	434·90	426·00	434·40	434·20	433·70	17
18	436·20	438·70	438·10	434·90	435·70	434·20	434·10	435·00	436·10	434·40	434·10	433·60	18
19	436·30	438·50	438·00	434·90	435·60	434·10	434·10	434·90	436·00	434·40	434·00	433·50	19
20	436·50	438·20	438·00	134·80	435·60	434·10	434·10	434·90	435·80	434·30	434·00	433·50	20
21	436·70	438·00	437·70	434·80	425·50	434·10	434·00	434·80	435·60	134·30	434·00	433·50	21
22	437·00	437·80	437·40	434·96	435·40	434·00	434·00	434·80	435·40	434·30	434·00	433·50	22
23	437·20	437·60	437·40	434·90	435·30	434·00	434·00	434·80	435·30	434·30	434·00	433·50	23
24	437·30	438·10	137·40	434·90	435·30	434·00	434·00	434·90	435·20	434·30	434·00	433·50	24
25	437·60	438·20	137·20	434·90	435·20	434·00	434·00	434·90	435·20	434·20	434·00	433·50	25
26	437·90	438·40	437·00	434·90	435·20	434·00	434·00	435·00	435·20	434·20	434·00	433·50	26
27	438·20	438·60	436·80	434·80	435·10	434·00	434·00	135·00	435·20	434·20	434·00	433·50	27
28	438·90	438·70	436·60	434·80	435·00	434·00	434·00	435·00	435·30	434·20	433·90	433·50	28
29	439·10	438·70	436·50	434·80	435·00	434·00	434·00	425·10	436·60	434·20	433·90	433·50	29
30	439·40	438·70	436·40	134·70	434·80	434·00	434·00	435·10	437·00	434·20	.....	433·50	30
31	.....	438·60	.....	434·70	434·80	.....	434·00	.....	435·50	434·20	.....	433·50	31

Elevation of Du Lièvre River below Poupore Lock, Que., during the year 1911–12.

Table No. 27.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	424·90	434·70	432·30	428·00	425·80	426·00	424·80	424·60	426·60	427·70	427·70	425·40	1
2	424·90	435·30	432·20	427·80	425·70	425·90	424·80	424·60	426·60	427·50	427·70	425·40	2
3	424·90	435·70	431·90	427·70	425·60	425·90	424·80	424·60	426·60	427·30	427·70	425·30	3
4	424·40	436·10	431·70	427·50	425·60	425·90	425·00	424·60	426·60	427·20	427·40	425·20	4
5	424·40	436·40	431·60	427·40	425·50	425·80	425·00	424·60	426·60	426·90	427·20	425·20	5
6	424·80	436·60	431·60	427·40	425·50	425·80	425·20	424·60	426·60	426·70	426·90	425·20	6
7	425·20	436·40	431·40	427·30	425·40	425·70	425·00	425·10	426·50	426·60	426·80	425·20	7
8	425·40	436·20	431·20	427·20	425·40	425·50	425·00	425·10	426·30	426·50	426·80	425·20	8
9	425·70	435 70	430·70	427·10	425·80	425·40	424·90	425·10	426·20	426·40	426·80	425·10	9
10	426·00	435·40	430·30	427·00	426·40	425·40	424·80	425·10	426·20	426·30	426·70	425·10	10
11	426·20	435·00	429·90	426·80	426·40	425·40	424·80	425·10	426·40	426·30	426·50	425·10	11
12	426·20	434·60	429·80	426·60	427·40	425·60	424·70	425·40	427·40	426·20	426·40	425·10	12
13	426·80	434·30	430·50	426·50	427·60	425·40	424·70	425·50	427·60	426·10	426·30	425·10	13
14	427·20	434·00	430·40	426·30	427·70	425·20	424·70	425·60	427·80	426·90	426·00	425·10	14
15	428·20	433·70	430·60	426·20	427·70	425·20	424·70	425·90	428·00	427·90	425·80	425·10	15
16	428·90	433·40	430·90	426·10	427·70	425·20	424·70	426·10	428·20	427·90	425·80	425·10	16
17	428·90	433·00	431·10	426·10	427·40	425·20	424·70	426·30	428·20	427·90	425·80	425·10	17
18	429·20	432·60	431·20	426·00	427·40	425·10	424·70	426·40	428·40	427·90	425·80	425·00	18
19	429·20	432·20	431·00	425·90	427·30	425·00	424·70	426·20	427·90	428·10	425·60	424·90	19
20	429·40	431·80	431·00	425·90	427·10	425·00	424·70	426·10	427·30	428·10	425·50	424·90	20
21	429·60	431·40	430·40	425·90	427·00	424·80	424·70	426·00	427·00	428·10	435·40	424·90	21
22	429·80	430·90	430·10	426·10	427·00	424·80	424·70	426·00	426·80	428·10	425·40	424·90	22
23	430·10	430·60	430·10	426·20	426·90	424·80	424·70	426·00	426·60	428·00	425·40	424·90	23
24	430·20	431·40	429·90	426·20	426·80	424·80	424·70	426·10	426·40	428·00	425·40	424·90	24
25	430·60	431·60	429·60	426·20	426·70	424·80	424·70	426·20	426·40	427·90	425·40	424·90	25
26	431·20	432·00	429·40	426·10	426·60	424·80	424·60	426·30	426·40	427·90	425·40	424·90	26
27	431·80	432·30	428·90	426·10	426·40	424·80	424·60	426·30	426·40	427·90	425·40	424·90	27
28	432·90	432·60	428·60	426·00	426·40	424·80	424·60	426·30	426·70	427·90	425·40	424·90	28
29	433·40	432·60	428·40	426·00	426·30	424·80	424·60	426·50	427·40	427·90	425·40	424·90	29
30	434·00	432·60	428·30	426·00	426·00	424·80	424·60	426·50	427·70	427·90	.....	424·90	30
31	.....	432·50	.....	425·90	426·00	.....	424·60	.....	427·90	427·70	.....	424·80	31

Elevations of South Nation River at Plantagenet Springs, Ont., during the year 1911–12.

Table No. 28.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	148·40	147·60	146·20	145·80	145·60	145·70	145·80	145·90	146·20	146·90	145·70	145·60	1
2	148·40	147·80	146·30	145·80	145·60	145·70	145·70	145·70	146·30	146·70	145·60	145·60	2
3	148·20	148·00	146·20	145·80	145·60	145·80	145·70	145·70	146·30	146·40	145·60	145·60	3
4	148·10	147·90	146·20	145·90	145·60	145·70	145·70	145·70	146·30	146·30	145·60	145·60	4
5	147·80	147·60	146·10	145·90	145·60	145·60	145·70	145·60	146·30	146·20	145·60	145·60	5
6	148·00	147·40	146·10	145·80	145·60	145·70	145·70	145·70	146·30	146·20	145·60	145·60	6
7	150·00	147·20	146·00	145·80	145·50	145·80	145·70	145·80	146·30	146·20	145·60	145·60	7
8	152·70	147·00	146·10	145·70	145·60	145·70	145·70	145·80	146·30	146·20	145·60	145·60	8
9	154·60	146·80	146·00	145·70	145·60	145·70	145·70	145·80	146·30	146·00	145·60	145·60	9
10	155·90	146·70	146·10	145·70	145·70	145·70	145·70	145·80	147·00	145·90	145·70	145·60	10
11	156·90	146·70	146·10	145·70	145·70	145·70	145·60	145·90	147·60	145·90	145·60	145·70	11
12	158·50	146·70	146·30	145·70	145·70	145·80	145·60	146·00	149·60	145·80	145·60	145·70	12
13	159·30	146·60	147·10	145·60	145·70	145·80	145·60	146·00	149·80	145·80	145·70	145·70	13
14	158·70	146·50	147·40	145·60	145·60	145·70	145·60	146·00	149·80	145·70	145·70	145·70	14
15	158·00	146·30	147·20	145·60	145·60	145·70	145·60	146·00	148·60	145·70	145·60	145·70	15
16	157·50	146·20	147·00	145·60	145·60	145·90	145·60	146·00	148·20	145·70	145·60	145·70	16
17	156·20	146·20	147·00	145·70	145·60	145·90	145·60	145·90	147·80	145·80	.....	145·70	17
18	154·00	146·10	146·90	145·70	145·50	145·80	145·80	145·90	147·50	145·80	145·60	145·70	18
19	152·90	146·20	146·70	145·70	145·60	145·80	145·90	145·90	147·40	145·90	145·70	145·70	19
20	150·60	146·20	146·50	145·70	145·60	145·70	145·90	146·00	147·30	145·80	145·80	145·70	20
21	150·00	146·10	146·30	145·70	145·60	145·70	145·80	146·00	147·10	145·80	145·80	145·70	21
22	149·50	146·10	146·20	145·70	145·60	145·70	145·70	145·90	147·00	145·80	145·80	145·70	22
23	149·10	146·10	146·00	145·70	145·50	145·70	145·60	146·00	147·00	145·80	145·80	145·70	23
24	148·70	146·30	146·10	145·70	145·50	145·70	145·50	146·00	147·20	145·70	145·80	145·70	24
25	148·50	146·40	146·10	145·70	145·60	145·70	145·50	146·00	147·50	145·70	145·80	145·70	25
26	148·20	146·30	146·10	145·60	145·70	145·70	145·50	146·00	147·80	145·70	145·70	145·70	26
27	148·10	146·30	145·90	145·60	145·70	145·70	145·50	146·00	148·00	145·70	145·70	145·80	27
28	147·90	146·20	145·90	145·60	145·70	145·70	145·70	146·00	147·80	145·70	145·70	145·80	28
29	147·80	146·20	145·80	145·60	145·70	145·80	145·80	146·00	147·40	145·70	145·60	145·90	29
30	147·70	146·10	145·80	145·60	145·70	145·80	145·80	146·10	147·20	145·70	.....	145·90	30
31	.....	146·00	.....	145·60	145·70	.....	145·80	.....	147·00	145·70	.....	145·90	31

ELEVATIONS of Rouge River above Table Falls, Que., during the year 1911–12.

TABLE NO. 29.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	359·00	364·20	362·20	360·55	359·20	358·95	359·05	359·20	359·95	360·20	359·70	359·25	1
2	359·00	364·50	362·00	360·50	359·10	358·95	359·05	359·20	359·95	360·30	359·65	359·25	2
3	358·95	364·80	361·90	360·45	359·20	358·90	359·05	359·15	359·90	360·30	359·60	359·20	3
4	358·90	364·80	361·70	360·40	359·20	358·85	359·10	359·10	359·90	360·30	359·60	359·15	4
5	358·90	364·20	361·50	360·35	359·10	358·90	359·10	359·05	359·85	360·25	359·60	359·10	5
6	359·00	363·70	361·40	360·30	359·15	359·00	359·10	359·00	359·80	360·25	359·55	359·05	6
7	359·40	363·40	361·30	360·20	359·15	359·15	359·15	359·00	359·75	360·25	359·55	359·00	7
8	359·70	363·00	361·10	360·10	359·30	359·25	359·15	359·15	359·75	360·20	359·55	358·90	8
9	359·90	362·80	361·00	360·00	359·30	359·15	359·10	359·35	359·80	360·20	359·50	358·80	9
10	360·00	362·50	360·90	359·95	359·35	359·10	359·10	359·40	359·95	360·15	359·50	358·80	10
11	360·20	362·30	360·70	359·80	359·90	359·10	359·05	359·65	360·25	360·10	359·50	358·80	11
12	360·30	362·00	360·70	359·70	360·00	359·10	359·00	359·85	361·65	360·10	359·45	358·80	12
13	360·50	361·50	360·90	359·55	360·10	359·00	358·95	359·95	361·55	360·10	359·45	358·80	13
14	360·90	361·60	361·10	359·50	359·95	359·00	358·85	360·05	361·55	360·05	359·40	358·80	14
15	361·20	361·50	361·30	359·40	359·80	359·00	358·80	360·25	361·45	360·05	359·40	358·80	15
16	361·20	361·50	361·70	359·40	359·70	359·10	358·75	360·45	361·35	359·90	359·40	358·80	16
17	361·30	361·40	361·80	359·45	359·65	359·05	358·75	360·65	361·25	359·90	359·40	358·85	17
18	361·40	361·20	361·70	359·70	359·70	359·00	358·70	360·75	360·95	359·90	359·40	358·85	18
19	361·70	361·00	361·50	359·70	359·65	358·95	358·70	360·75	360·95	359·90	359·40	358·85	19
20	361·90	360·80	361·40	359·70	359·65	358·95	358·65	360·55	360·85	360·00	359·35	358·90	20
21	362·10	360·90	361·20	359·70	359·65	358·90	358·70	360·35	360·65	360·05	359·35	358·95	21
22	362·20	360·60	361·10	359·70	359·60	358·90	358·70	360·15	360·55	360·10	359·35	359·00	22
23	362·40	360·60	361·00	359·70	359·50	358·90	358·85	359·95	360·55	360·10	359·40	359·00	23
24	362·75	360·90	360·90	359·60	359·45	358·90	358·95	359·95	360·50	360·10	359·40	358·95	24
25	362·90	360·80	360·80	359·50	359·25	358·90	359·05	359·85	360·45	360·00	359·40	358·95	25
26	363·00	362·60	360·75	359·45	359·20	358·90	359·15	359·80	360·35	360·00	359·35	359·00	26
27	363·20	363·20	360·70	359·40	359·15	359·05	359·25	359·75	360·25	359·95	359·35	359·00	27
28	363·50	363·20	360·70	359·35	359·15	359·15	359·30	359·80	360·25	359·90	359·30	359·00	28
29	363·70	363·00	360·65	359·30	359·20	359·10	359·30	359·85	360·15	359·85	359·30	359·00	29
30	363·20	362·80	360·60	359·25	359·15	359·10	359·25	359·95	360·05	359·80	.....	359·00	30
31	.....	362·50	.....	359·20	359·05	.....	359·25	.....	360·05	359·75	.....	359·05	31

Elevations of Ottawa River at Head of Grenville Canal, during the year 1911–12.

Table No. 30.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	127·68	134·85	135·85	132·18	128·52	127·93	126·93	126·85	128·68	130·18	128·18	127·52	1
2	127·60	135·35	135·77	132·27	128·43	127·77	126·93	126·93	128·60	130·18	128·10	127·52	2
3	127·60	135·35	135·43	132·18	128·43	127·77	126·93	126·93	128·60	130·18	128·10	127·52	3
4	127·52	136·35	135·35	131·93	128·43	127·68	126·85	126·85	128·60	130·10	128·10	127·52	4
5	127·60	136·60	135·18	131·85	128·35	127·60	126·93	126·85	128·52	130·10	128·10	127·43	5
6	127·68	136·85	135·10	131·68	128·35	127·60	127·02	126·93	128·60	130·10	128·02	127·43	6
7	127·85	136·85	135·02	131·52	128·35	127·68	126·85	127·02	128·60	130·10	128·02	127·43	7
8	127·85	137·10	134·85	131·35	128·35	127·60	126·85	127·02	128·60	130·02	128·02	127·35	8
9	129·85	137·52	134·60	131·18	128·52	127·52	126·77	127·10	128·68	130·02	127·93	127·35	9
10	130·93	137·60	134·35	131·02	128·68	127·43	126·77	127·18	128·85	130·02	127·93	127·35	10
11	131·85	137·60	134·27	130·85	128·85	127·35	126·68	127·35	128·93	130·02	127·93	127·35	11
12	132·18	137·60	134·27	130·77	128·85	127·35	126·68	127·52	129·85	130·02	127·85	127·27	12
13	132·68	137·43	134·35	130·60	129·02	127·35	126·68	127·68	130·35	129·93	127·85	127·35	13
14	133·02	137·18	134·60	130·35	129·18	127·35	126·68	127·85	130·60	129·93	127·85	127·35	14
15	133·35	136·85	134·60	130·10	129·18	127·27	126·60	128·02	130·35	129·85	127·85	127·43	15
16	133·35	136·68	134·68	129·93	129·18	127·35	126·60	128·27	130·35	129·85	127·77	127·43	16
17	133·35	136·52	134·52	129·77	128·85	127·35	126·60	128·27	130·35	129·85	127·77	127·52	17
18	132·85	136·35	134·43	129·85	128·77	127·27	126·52	128·35	130·18	129·68	127·68	127·60	18
19	132·68	136·18	134·35	129·77	128·77	127·18	126·60	128·35	130·10	129·68	127·68	127·68	19
20	132·60	135·85	134·18	129·60	128·68	127·18	126·60	128·35	130·10	129·35	127·68	127·68	20
21	132·35	135·68	134·02	129·52	128·68	127·18	126·68	128·35	130·10	129·27	127·68	127·68	21
22	132·18	135·52	133·85	129·52	128·52	127·18	126·68	128·27	130·10	129·18	127·60	127·60	22
23	132·35	135·35	133·52	129·43	128·43	127·18	126·68	128·35	130·02	129·10	127·60	127·60	23
24	132·60	135·52	133·35	129·35	128·35	127·18	126·77	128·68	130·02	129·10	127·60	127·60	24
25	132·85	135·85	133·10	129·18	128·35	128·18	127·77	128·68	130·02	129·02	127·68	127·52	25
26	133·02	135·85	132·85	129·18	128·27	127·10	126·77	128·85	130·02	128·85	127·68	127·52	26
27	133·18	136·02	132·60	129·02	128·18	127·02	126·77	128·85	129·85	128·77	127·60	127·52	27
28	133·52	136·02	132·60	128·85	128·10	127·02	126·77	128·93	129·85	127·77	127·60	127·60	28
29	133·85	135·85	132·52	128·85	128·10	126·93	126·85	129·08	129·85	128·68	127·60	127·60	29
30	134·35	135·93	132·35	128·68	127·93	127·02	126·77	128·85	130·18	128·52	.....	127·68	30
31	.....	136·02	.....	128·60	127·93	.....	126·85	.....	130·18	128·35	.....	127·68	31

Elevations of Ottawa River at Foot of Grenville Canal, during the year 1911–12.

Table No. 31.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	89·13	91·97	93·13	89·30	85·72	84·97	84·22	84·30	85·80	97·05	90·05	96·97	1
2	89·30	92·63	93·13	89·22	85·63	84·97	84·22	84·30	85·88	96·97	89·88	97·87	2
3	89·30	93·22	93·13	89·13	85·63	84·88	84·22	84·30	85·97	96·97	89·72	97·80	3
4	89·13	93·63	93·47	89·05	85·55	84·80	84·30	84·30	86·13	96·80	94·47	97·80	4
5	88·97	94·05	92·72	88·88	85·55	84·88	84·30	84·30	86·30	96·63	94·38	98·13	5
6	88·97	94·38	92·55	88·80	85·55	84·97	84·22	84·38	86·47	96·47	94·47	96·80	6
7	88·88	94·63	92·38	88·63	85·55	84·88	84·22	84·38	85·80	96·30	94·55	96·38	7
8	89·22	94·88	92·22	88·47	85·63	84·88	84·13	84·47	85·63	96·30	94·72	96·22	8
9	89·80	95·05	92·47	88·22	85·63	84·80	84·13	84·55	85·72	96·05	94·88	95·88	9
10	90·55	95·13	92·30	88·05	85·80	84·72	84·13	84·63	85·72	95·80	95·05	95·55	10
11	91·38	95·22	91·55	87·88	85·88	84·63	84·13	84·72	85·80	95·63	95·38	95·38	11
12	91·97	95·05	91·30	87·72	85·97	84·63	84·13	84·72	86·80	95·22	95·72	95·13	12
13	92·72	95·05	91·13	87·55	86·05	84·63	84·13	84·88	87·30	94·72	96·05	94·97	13
14	92·30	94·88	91·47	87·38	86·13	84·55	84·05	84·97	87·38	94·22	96·38	93·63	14
15	91·97	94·55	91·72	87·22	86·13	84·47	84·05	85·30	87·30	93·88	96·38	92·97	15
16	91·55	94·30	91·72	87·13	86·05	84·47	84·05	85·22	87·13	93·47	96·05	92·88	16
17	91·22	94·05	91·72	87·05	85·97	84·47	84·05	85·22	87·05	93·22	95·13	92·38	17
18	90·38	93·80	91·47	86·97	85·88	84·47	84·13	85·30	86·97	92·97	94·05	91·30	18
19	89·97	93·55	91·30	86·80	85·80	84·47	84·13	85·30	86·97	92·72	93·97	91·13	19
20	89·80	93·30	91·05	86·72	85·72	84·38	84·13	85·30	86·88	92·47	93·88	90·80	20
21	89·63	93 05	90·88	86·63	85·63	84·38	84·13	85·38	86·80	92·22	93·88	91·13	21
22	89·55	92·80	90·63	86·47	85·63	84·38	84·13	85·47	87·72	91·97	93·97	91·13	22
23	89·55	92·80	90·38	86·38	85·55	84·38	84·13	85·55	86·80	91·80	94·05	90·80	23
24	89·63	92·88	90·22	86·30	85·55	84·30	84·22	85·63	86·80	91·63	95·72	90·53	24
25	89·80	93·05	90·05	86·22	85·47	84·30	84·22	85·72	86·80	91·47	95·97	89·47	25
26	89·97	93·30	89·88	86·13	85·38	84·30	84·30	85·72	86·80	91·20	96·47	89·13	26
27	89·97	93·38	89·72	86·05	85·30	84·30	84·30	85·72	87·22	90·97	96·05	88·80	27
28	90·22	93·47	89·63	85·97	85·30	84·30	84·30	85·80	88·72	90·72	96·05	87·97	28
29	90·55	93·55	89·55	85·88	85·22	84·30	84·22	85·80	88·80	90·47	95·97	87·97	29
30	90·22	93·47	89·22	85·80	85·13	84·30	84·22	85·80	*	90·30	.....	87·80	30
31	.....	93·13	.....	85·72	85·05	.....	84·22	.....	.....	90·05	.....	87·72	31

*Ice jam.

Elevations of Ottawa River at Head of Carillon Canal, during the year 1911–12.

Table No. 32.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	84·92	90·25	91·25	88·17	85·50	84·83	84·33	84·08	85·58	88·33	89·17	85·83	1
2	85·00	90·83	91·25	88·08	85·42	84·83	84·33	84·08	85·67	89·00	89·00	86·25	2
3	84·92	91·17	91·00	88·00	85·33	84·75	84·33	84·17	85·67	89·50	89·50	85·83	3
4	84·92	91·67	90·83	88·00	85·50	84·67	84·33	84·17	86·17	89·33	88·42	86·00	4
5	84·92	92·00	90·67	87·92	85·25	84·67	84·33	84·25	86·00	90·42	88·00	85·50	5
6	84·92	92·50	90·42	87·67	85·17	84·75	84·33	84·25	85·00	91·33	88·08	85·33	6
7	85·08	92·50	90·42	87·58	85·08	84·75	84·25	84·33	85·00	92·00	87·42	86·08	7
8	85·50	92·67	90·33	87·50	85·25	84·75	84·25	84·33	85·00	92·00	87·17	85·33	8
9	86·75	92·67	90·25	87·42	85·33	84·75	84·25	84·50	85·17	92·00	87·75	85·33	9
10	87·67	92·67	90·17	87·33	85·42	84·58	84·25	84·58	85·17	93·00	88·67	85·33	10
11	88·50	92·67	89·92	87·25	85·50	84·58	84·25	84·67	85·33	94·58	87·75	85·75	11
12	88·83	92·67	89·75	86·92	85·58	84·67	84·17	84·75	85·58	94·75	87·17	86·00	12
13	89·00	92·50	89·75	86·75	85·67	84·58	84·17	84·83	85·67	89·00	86·92	86·00	13
14	89·00	92·25	90·00	86·58	85·83	84·50	84·17	84·83	86·00	89·17	87·00	85·83	14
15	89·00	92·00	89·92	86·50	85·92	84·50	84·08	84·92	86·50	89·00	87·25	85·17	15
16	89·00	92·00	90·17	86·42	85·83	84·50	84·08	85·00	86·33	90·00	87·58	85·17	16
17	89·00	91·83	90·17	86·33	85·83	84·50	83·92	85·08	86·33	89·42	86·33	85·17	17
18	88·75	91·75	90·17	86·17	85·83	84·42	84·00	85·17	86·17	89·00	85·83	85·17	18
19	88·58	91·50	89·83	86·00	85·75	84·33	83·92	85·25	86·17	89·50	85·83	85·17	19
20	88·50	91·25	89·58	86·00	85·58	84·33	83·92	85·25	86·00	89·50	85·58	85·08	20
21	87·92	91·00	89·50	85·92	85·42	84·33	83·92	85·25	86·83	88·00	86·92	85·08	21
22	88·25	90·75	89·25	85·83	85·33	84·33	83·92	85·33	87·00	90·08	86·83	85·08	22
23	88·50	90·75	89·17	85·67	85·17	84·33	83·83	85·33	87·17	89·25	88·08	85·25	23
24	88·50	90·83	89·08	85·42	85·33	84·33	83·83	85·33	86·50	86·25	88·08	85·17	24
25	88·50	91·25	88·83	85·50	85·33	84·33	84·00	85·42	86·50	86·25	87·25	85·17	25
26	88·50	91·25	88·67	85·67	85·25	84·33	84·17	85·50	86·25	86·00	86·33	85·67	26
27	88·83	91·25	88·67	85·67	85·17	84·33	84·25	85·50	86·17	85·83	86·33	84·83	27
28	89·08	91·42	88·58	85·67	85·00	84·42	84·25	85·50	87·00	86·00	86·58	84·67	28
29	89·50	91·42	88·42	85·67	84·83	84·33	84·17	85·58	87·17	87·25	86·58	84·67	29
30	89·83	91·33	88·25	85·58	84·75	84·33	84·08	85·58	89·00	88·00	.....	84·58	30
31	.....	91·17	.....	85·50	84·83	.....	84·08	.....	88·17	88·00	.....	84·67	31

Elevations of Ottawa River at Foot of Carillon Canal, during the year 1911–12.

Table No. 33.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	70·53	74·95	75·78	73·20	70·78	70·30	69·70	69·62	70·87	72·03	72·37	72·62	1
2	70·53	75·12	75·70	73·12	70·78	70·30	69·70	69·45	71·03	71·87	72·37	72·62	2
3	70·70	75·37	75·70	72·87	70·70	70·20	69·70	69·45	71·03	71·87	72·03	72·62	3
4	70·87	75·95	75·53	72·87	70·78	70·20	69·70	69·53	71·12	71·87	71·95	72·53	4
5	70·95	76·37	75·45	72·87	70·70	70·20	69·62	69·45	71·12	71·78	71·95	72·62	5
6	70·95	76·70	75·37	72·70	70·70	70·20	69·62	69·62	71·03	71·95	72·12	72·53	6
7	71·03	76·87	75·37	72·70	70·62	70·30	69·62	69·45	71·03	72·12	72·03	72·62	7
8	71·37	77·03	75·28	72·62	70·62	70·20	69·53	69·45	70·95	72·20	71·95	72·62	8
9	71·87	77·20	75·12	72·45	70·70	70·30	69·53	69·62	70·87	72·20	72·03	72·45	9
10	72·62	77·20	74·95	72·28	70·70	70·20	69·53	69·78	70·87	72·12	72·03	72·45	10
11	73·20	77·20	74·95	72·20	70·87	70·20	69·53	69·95	70·95	72·12	72·45	72·37	11
12	73·95	77·37	74·70	72·03	70·87	69·95	69·53	69·95	71·28	72·20	72·70	72·37	12
13	74·95	77·20	74·70	71·95	70·87	69·95	69·45	69·78	71·78	72·37	72·78	72·28	13
14	75·37	76·95	74·78	71·87	70·95	69·80	69·45	70·03	72·12	72·37	72·70	72·37	14
15	75·70	76·87	74·87	71·70	71·03	70·05	69·45	70·20	72·20	72·20	72·45	72·28	15
16	75·95	76·70	74·95	71·62	71·03	69·95	69·45	70·03	72·03	72·20	72·45	72·28	16
17	75·70	76·53	74·78	71·62	70·95	69·95	69·62	70·20	72·12	72·28	72·37	72·20	17
18	75·20	76·37	74·78	71·53	70·87	69·95	69·62	70·20	72·03	72·28	72·20	72·03	18
19	74·96	76·12	74·62	71·45	70·70	69·95	69·53	70·20	71·95	72·20	72·03	71·95	19
20	74·53	75·95	74·53	71·37	70·70	69·80	69·62	70·37	71·95	72·20	71·87	71·95	20
21	74·28	75·78	74·37	71·37	70·70	69·95	69·62	70·45	71·95	72·37	71·70	71·87	21
22	74·12	75·70	74·20	71·28	70·62	69·87	69·62	70·37	71·95	72·12	71·62	71·87	22
23	73·95	75·62	74·03	71·20	70·62	69·87	69·45	70·53	71·87	71·95	71·62	71·87	23
24	73·95	75·62	73·95	71·20	70·62	69·80	69·37	70·62	71·78	71·95	71·62	71·95	24
25	73·87	75·78	73·87	71·03	70·62	69·87	69·37	70·53	71·78	71·87	71·78	71·87	25
26	73·87	75·95	73·70	70·95	70·62	69·80	69·37	70·53	71·78	71·78	71·87	71·70	26
27	73·95	76·03	73·62	70·95	70·53	69·87	69·45	70·70	71·78	71·95	71·95	71·62	27
28	74·12	76·03	73·28	70·95	70·53	69·70	69·45	70·70	71·62	72·12	72·03	71·62	28
29	74·37	76·03	73·28	70·87	70·37	69·80	69·37	70·62	71·78	71·95	72·37	71·53	29
30	74·70	76·03	73·20	70·78	70·37	69·70	69·45	70·78	72·12	71·95	.....	71·45	30
31	.....	75·95	.....	70·78	70·20	.....	69·62	.....	72·12	72·28	.....	71·37	31

Elevations of Ottawa River at Head of Ste. Anne's Canal, during the year 1911–12.

Table No. 34.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	70·73	74·48	75·32	72·90	70·73	70·32	69·73	69·75	70·90	72·07	70·98	71·98	1
2	70·90	74·98	75·23	72·90	70·73	70·32	69·73	69·73	70·90	72·15	70·98	71·98	2
3	70·98	75·40	75·07	72·82	70·82	70·32	69·73	69·82	70·98	72·23	70·90	71·98	3
4	70·90	75·57	74·98	72·73	70·73	70·23	69·73	69·65	70·98	71·40	70·98	71·98	4
5	70·90	75·73	74·82	72·65	70·73	70·15	69·82	69·65	70·90	71·40	71·07	71·98	5
6	70·98	76·07	74·73	72·48	70·65	70·40	69·73	69·65	70·82	71·48	71·15	71·98	6
7	71·07	76·23	74·73	72·48	70·65	70·23	69·65	69·73	70·82	71·48	71·23	71·90	7
8	71·32	76·23	74·73	72·32	70·57	70·23	69·65	69·90	70·82	71·48	71·32	71·90	8
9	71·57	76·40	74·57	72·23	70·57	70·23	69·65	69·82	70·82	71·57	71·32	71·82	9
10	72·90	76·48	74·48	72·15	70·73	70·15	69·57	69·90	70·98	71·57	71·40	71·65	10
11	73·90	76·48	74·32	72·07	70·82	70·07	69·57	69·98	71·07	71·48	71·82	71·65	11
12	74·15	76·57	74·32	71·98	70·90	70·32	69·57	69·98	71·23	71·32	71·90	71·57	12
13	74·23	76·40	74·15	71·90	70·98	70·07	69·57	70·23	71·73	71·82	71·90	71·48	13
14	74·65	76·40	74·32	71·73	70·98	69·98	69·57	70·07	71·90	71·82	71·90	71·48	14
15	74·82	76·23	74·32	71·57	71·15	69·82	69·57	70·23	72·07	71·65	71·82	71·48	15
16	74·98	76·07	74·32	71·40	70·90	69·98	69·48	70·48	70·23	71·48	71·73	71·48	16
17	73·40	75·90	74·32	71·32	70·82	69·98	69·48	70·40	71·90	71·48	71·65	71·48	17
18	73·40	75·73	74·23	71·48	70·82	69·90	69·57	70·48	71·82	71·40	71·48	71·32	18
19	72·57	75·57	74·07	71·40	70·82	69·90	69·65	70·57	71·73	71·32	71·15	71·23	19
20	72·40	75·40	74·15	71·32	70·65	69·90	69·65	70·48	71·73	71·23	70·98	71·15	20
21	72·57	75·23	72·07	71·23	70·65	69·90	69·65	70·57	71·73	71·23	70·98	71·15	21
22	72·73	75·07	73·82	71·23	70·65	69·90	69·65	70·57	71·65	71·23	71·15	71·15	22
23	72·90	74·98	73·73	71·23	70·65	69·82	69·65	70·57	71·57	71·32	71·48	71·15	23
24	73·15	74·98	73·57	71·07	70·57	69·82	69·65	70·57	71·57	71·32	71·65	71·15	24
25	73·57	75·07	73·40	71·15	70·57	69·90	69·57	70·65	71·57	71·32	71·65	71·07	25
26	73·57	75·23	73·32	71·07	70·48	69·82	69·65	70·65	71·57	71·23	71·65	71·07	26
27	73·65	75·32	73·23	70·98	70·48	69·82	69·65	70·65	71·65	71·23	71·82	71·07	27
28	73·73	75·40	73·15	70·90	70·57	69·82	69·65	70·73	71·65	71·15	71·82	70·98	28
29	73·90	75·40	73·07	70·90	70·40	69·73	69·57	70·82	71·90	71·15	71·98	70·98	29
30	74·15	75·40	72·98	70·82	70·32	69·73	69·57	70·82	72·15	71·07	.....	70·98	30
31	.....	75·23	.....	70·73	.....	.....	69·57	.....	72·40	71·07	.....	70·90	31

Elevations of Ottawa River at Foot of Ste. Anne's Canal, during the year 1911–12.

Table No. 35.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	68·38	70·13	70·47	66·97	67·80	67·22	66·88	66·97	67·05	69·30	68·22	68·63	1
2	68·47	70·38	70·38	66·88	67·72	67·22	66·88	66·72	67·22	69·47	68·22	68·47	2
3	68·55	70·63	70·13	66·80	67·72	67·22	66·80	66·63	67·13	69·55	68·47	68·47	3
4	68·47	70·97	70·30	66·63	67·72	67·30	66·72	66·88	67·30	69·63	68·30	68·38	4
5	68·55	71·05	70·22	66·38	67·72	67·13	66·88	66·88	67·38	69·63	68·05	68·30	5
6	68·63	71·22	70·13	66·30	67·72	67·30	67·05	66·88	67·38	69·47	68·38	68·22	6
7	68·80	71·05	70·22	66·13	67·72	67·30	67·05	66·88	67·47	69·30	68·72	68·05	7
8	69·30	71·30	70·05	66·13	67·72	67·22	66·72	66·88	67·47	69·22	68·80	68·05	8
9	69·72	71·30	70·05	65·97	67·63	67·05	66·88	66·97	67·38	68·97	68·63	67·97	9
10	70·05	71·30	70·05	65·80	67·63	66·97	66·97	67·22	67·47	68·72	68·47	67·97	10
11	70·47	71·55	69·97	65·72	67·72	67·30	66·97	67·05	67·47	68·63	68·38	67·88	11
12	70·80	71·30	69·97	65·55	67·63	67·30	66·88	67·13	67·63	68·63	68·22	67·97	12
13	71·30	71·30	69·97	65·55	67·55	67·13	66·88	66·97	67·97	68·63	68·30	67·88	13
14	71·30	71·30	69·88	65·55	67·72	67·05	66·80	67·30	68·13	68·72	68·47	67·80	14
15	71·30	71·13	70·05	65·55	67·72	67·22	66·80	67·47	68·13	68·55	68·47	68·22	15
16	71·30	71·13	69·97	65·47	67·80	67·13	66·88	67·13	68·13	68·38	68·38	67·80	16
17	71·38	70·97	69·97	65·55	67·72	67·22	66·97	67·05	68·13	68·47	68·38	67·80	17
18	71·47	70·80	69·88	65·47	67·63	67·13	66·97	67·13	68·13	68·47	68·30	67·80	18
19	71·38	70·72	69·88	65·47	67·63	67·05	67·05	67·13	68·22	68.47	67·88	67·80	19
20	71·38	70·63	69·88	65·38	67·55	67·05	66·97	67·38	68·22	68·55	68·38	67·72	20
21	71·22	70·47	69·72	65·13	67·47	67·05	66·97	67·30	68·13	68·55	67·63	67·80	21
22	71·05	70·38	69·63	65·05	67·55	66·97	66·97	67·30	68·13	68·55	67·47	68·22	22
23	69·97	70·38	69·55	64·97	67·55	67·05	66·88	67·30	68·13	68.63	67·47	68·05	23
24	69·80	70·38	69·47	64·97	67·55	67·05	66·97	67·30	68·22	68·72	67·88	67·88	24
25	69·80	70·30	69·30	65·05	67·47	66·97	67·05	67·22	67·97	68·72	67·88	67·80	25
26	69·80	70·47	69·13	65·13	67·47	67·05	67·05	67·30	67·88	68·63	67·88	67·80	26
27	69·80	70·63	69·22	65·13	67·38	67·05	67·05	67·13	67·88	68·22	68·05	67·80	27
28	70·72	70·55	69·22	65·05	67·47	66·97	66·88	67·30	68·13	68·13	68·13	67·63	28
29	69·80	70·63	69·13	65·05	67·47	66·97	66·97	67·13	68·38	68·22	68·30	67·63	29
30	69·97	70·63	69·13	65·05	67·38	66·88	66·97	67·30	68·47	68·22	.....	67·63	30
31	.....	70·55	.....	64·97	67·30	.....	67·13	.....	68·80	68·22	.....	67·80	31

Elevations of St. Lawrence River at Head of Soulanges Canal, during the year 1911–12.

Table No. 36.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	151·75	151·75	151·58	151·50	151·25	150·92	150·75	150·92	150·92	151·42	.....	150·00	1
2	151·75	151·92	151·58	151·50	151·00	150·92	150·75	150·75	150·92	151·67	.....	149·92	2
3	151·92	151·92	151·58	151·58	151·00	150·92	150·67	150·75	150·92	151·67	.....	150·92	3
4	151·58	151·92	151·58	151·58	151·25	151·00	150·67	150·75	150·92	151·42	151·33	150·83	4
5	151·58	151·92	151·58	151·58	151·00	150·92	150·83	150·75	150·83	151·50	151·50	150·67	5
6	151·67	151·92	151·33	151·50	151·00	150·92	150·83	150·83	150·83	151·50	151·42	150·67	6
7	151·92	151·92	151·42	151·50	151·00	150·92	150·75	150·83	150·83	151·67	151·42	150·67	7
8	152·58	151·92	151·42	151·42	151·00	150·83	150·75	150·83	150·75	151·83	151·42	150·67	8
9	152·50	151·92	151·50	151·58	151·00	150·83	150·75	150·83	150·83	151·83	151·00	150·67	9
10	152·50	151·75	151·58	151·50	151·00	151·00	150·75	150·92	150·83	151·75	151·25	150·75	10
11	152·50	151·92	151·58	151·50	151·25	151·00	150·75	150·92	150·83	151·67	151·33	150·75	11
12	152·42	151·83	151·58	151·50	151·25	150·92	150·75	150·92	150·92	151·58	151·33	150·75	12
13	152·33	151·75	151·58	151·50	151·25	150·83	150·75	150·92	151·00	151·42	151·33	150·75	13
14	152·33	151·92	151·58	151·42	151·25	150·83	150·75	150·92	151·00	151·42	151·42	150·75	14
15	152·42	151·75	151·58	151·42	151·00	150·83	150·75	150·92	151·00	151·50	151·00	150·75	15
16	152·50	151·67	151·58	151·42	151·00	150·83	150·75	150·92	150·92	151·33	150·92	150·67	16
17	152·50	151·67	151·58	151·42	151·00	150·92	150·67	150·92	151·42	151·33	150·92	150·75	17
18	152·25	151·58	151·58	151·42	151·00	150·92	150·67	150·92	151·33	151·00	150·67	150·75	16
19	151·83	151·58	151·67	151·42	151·00	150·92	150·67	150·92	151·33	151·42	150·75	150·75	19
20	151·83	151·58	151·67	151·33	151·00	150·92	150·67	150·92	151·33	151·50	150·75	150·83	20
21	151·75	151·58	151·67	151·33	151·25	150·92	150·75	150·92	151·25	151·42	150·83	151·00	21
22	151·67	151·58	151·67	151·42	151·25	150·92	150·75	150·92	150·92	151·42	150·92	151·00	22
23	151·67	151·58	151·58	151·42	151·25	150·92	150·83	150·92	150·25	151·42	150·92	151·08	23
24	151·75	151·58	151·58	151·42	151·00	150·92	150·83	150·92	150·42	151·33	150·58	151·08	24
25	151·83	151·58	151·58	151·75	150·92	150·83	150·83	150·92	150·42	151·00	149·67	151·00	25
26	151·83	151·58	151·50	151·75	150·92	150·83	150·83	159·92	150·42	150·67	149·67	151·00	26
27	151·75	151·58	151·50	151·67	150·92	150·83	150·83	150·83	150·42	150·67	149·58	150·92	27
28	151·75	151·67	151·50	151·50	150·92	150·83	150·92	150·83	150·42	150·67	149·75	150·92	28
29	151·75	151·67	151·50	151·42	150·92	.....	150·92	150·83	150·42	150·83	150·00	150·92	29
30	151·75	151·58	151·50	151·42	150·92	.....	150·92	150·83	150·42	150·83	.....	151·00	30
31	.....	151·50	.....	151·42	.....	.....	150·92	.....	151·75	150·83	.....	151·00	31

Elevations of St. Lawrence River at Coteau du Lac, during the year 1911–12.

Table No. 37.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	.....	.....	.....	.....	.....	.....	.....	132·75	133·35	134·15	132·95	132·55	1
2	.....	.....	.....	.....	.....	.....	.....	132·85	133·35	133·95	133·15	132·65	2
3	.....	.....	.....	.....	.....	.....	.....	132·95	133·15	134·15	132·95	132·75	3
4	.....	.....	.....	.....	.....	.....	.....	133·05	132·95	134·15	132·95	132·75	4
5	.....	.....	.....	.....	.....	.....	.....	132·95	132·65	134·35	133·15	132·35	5
6	.....	.....	.....	.....	.....	.....	.....	132·55	132·95	134·35	133·35	132·35	6
7	.....	.....	.....	.....	.....	.....	.....	133·05	132·95	134·45	133·55	132·55	7
8	.....	.....	.....	.....	.....	.....	.....	133·25	133·15	134·35	133·75	132·55	8
9	.....	.....	.....	.....	.....	.....	.....	133·15	133·35	134·45	133·35	132·75	9
10	.....	.....	.....	.....	.....	.....	.....	133·05	133·35	.....	133·25	132·75	10
11	.....	.....	.....	.....	.....	.....	.....	132·95	133·35	134·35	133·15	132·95	11
12	.....	.....	.....	.....	.....	.....	.....	133·05	133·45	133·95	132·95	132·95	12
13	.....	.....	.....	.....	.....	.....	.....	133·25	133·55	133·65	132·95	132·95	13
14	.....	.....	.....	.....	.....	.....	132·95	133·25	133·55	133·65	132·95	132·75	14
15	.....	.....	.....	.....	.....	.....	132·85	133·35	133·35	133·55	132·95	132·95	15
16	.....	.....	.....	.....	.....	.....	132·85	133·15	.....	133·45	132·75	133·15	16
17	.....	.....	.....	.....	.....	.....	132·85	132·95	.....	133·45	132·75	133·15	17
18	.....	.....	.....	.....	.....	.....	132·95	132·85	.....	133·35	132·75	133·25	18
19	.....	.....	.....	.....	.....	.....	132·95	133·25	.....	133·35	132·65	133·25	19
20	.....	.....	.....	.....	.....	.....	133·05	133·25	.....	133·45	132·65	133·35	20
21	.....	.....	.....	.....	.....	.....	133·05	133·15	.....	133·45	132·65	133·35	21
22	.....	.....	.....	.....	.....	.....	132·95	133·05	.....	133·45	132·55	133·55	22
23	.....	.....	.....	.....	.....	.....	133·10	132·95	.....	133·35	132·55	133·55	23
24	.....	.....	.....	.....	.....	.....	133·15	132·95	.....	133·95	132·45	133·55	24
25	.....	.....	.....	.....	.....	.....	132·95	133·25	.....	133·95	132·35	133·65	25
26	.....	.....	.....	.....	.....	.....	133·05	133·15	.....	133·85	132·35	133·65	26
27	.....	.....	.....	.....	.....	.....	133·00	132·95	.....	133·55	132·35	133·65	27
28	.....	.....	.....	.....	.....	.....	132·95	132·65	.....	133·25	132·55	133·65	28
29	.....	.....	.....	.....	.....	.....	133·15	133·15	.....	132·95	132·75	133·75	29
30	.....	.....	.....	.....	.....	.....	133·15	133·25	.....	132·95	.....	133·75	30
31	.....	.....	.....	.....	.....	.....	132·65	.....	.....	132·95	.....	133·85	31

Elevations of St. Lawrence River at Cedars Village, during the year 1911–12.

Table No. 38.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1					125·85	125·45	125·15	125·05	125·55	126·05	125·85	125·45	1
2					125·85	125·55	125·05	125·65	125·45	126·05	125·75	125·15	2
3					125·85	125·55	125·05	125·55	125·45	126·25	125·45	125·25	3
4					125·75	125·45	125·15	125·35	125·45	126·15	125·75	125·15	4
5				125·95	125·75	125·35	125·45	125·15	125·15	125·95	125·65	124·95	5
6				126·15	125·75	125·25	125·25	125·25	125·45	125·85	125·75	124·85	6
7				125·95	125·75	125·15	125·15	125·75	125·45	126·05	125·85	125·05	7
8				125·95	125·75	125·05	125·25	125·65	125·25	125·85	126·05	124·95	8
9				125·95	125·75	125·05	125·25	125·25	125·35	125·65	125·85	125·05	9
10				126·05	125·75	125·15	125·35	125·15	125·25	125·75	125·75	125·15	10
11				126·25	125·85	125·25	125·25	125·25	125·35	125·65	125·65	125·25	11
12				126·15	125·65	125·35	125·25	125·75	125·45	125·45	125·55	124·95	12
13				126·05	125·65	125·35	125·25	125·65	125·55	125·25	125·35	124·85	13
14				126·25	125·75	125·25	125·05	125·55	125·65	125·65	125·55	124·95	14
15				125·95	125·75	125·35	125·15	125·45	125·55	125·75	125·65	124·55	15
16				125·95	125·75	125·45	125·25	125·55	125·35	126·25	125·45	124·65	16
17				126·05	125·65	125·35	125·15	125·15	125·65	125·75	125·05	124·85	17
18				126·15	125·65	125·35	125·35	125·25	125·75	125·45	124·65	124·85	18
19				126·05	125·65	125·25	125·25	125·75	125·75	126·35	124·95	124·85	19
20				126·05	125·65	125·35	125·25	125·65	125·65	125·65	124·95	124·95	20
21				125·95	125·65	125·35	125·25	125·45	125·45	125·75	125·05	125·15	21
22				126·15	125·75	125·35	125·25	125·35	125·35	125·85	125·15	125·25	22
23				126·15	125·65	125·35	125·65	125·15	125·75	125·85	125·25	125·35	23
24				126·15	125·55	125·35	125·55	125·35	125·75	126·15	125·35	125·35	24
25				126·55	125·55	125·35	125·55	125·35	125·65	126·45	124·65	125·25	25
26				126·35	125·55	125·35	125·45	125·45	126·05	126·25	124·45	125·25	26
27				126·05	125·45	125·35	125·45	125·25	126·15	126·05	124·55	125·25	27
28				125·95	125·75	125·25	125·65	125·15	125·75	125·85	124·65	125·15	28
29				125·95	125·75	125·25	125·75	125·55	125·25	125·45	124·85	125·15	29
30				125·95	125·35	125·15	125·55	125·55	125·75	125·45	.....	125·25	30
31				125·95	125·35	.....	125·25	.....	.....	126·05	.....	125·35	31

Elevations of St. Lawrence River at Light, Heat and Power Co. below Cedars, during the year 1911–12.

Table No. 39.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1								95·00	94·90	95·10	95·20	94·70	1
2								95·00	94·90	95·30	95·20	94·70	2
3								94·90	94·90	95·40	95·30	94·80	3
4								94·80	94·80	95·20	95·00	94·80	4
5								94·70	94·90	95·20	94·90	94·90	5
6								94·60	95·00	95·30	95·10	94·90	6
7								94·70	95·00	95·00	95·20	95·00	7
8								94·90	94·90	95·30	95·10	94·70	8
9								94·80	95·00	95·20	94·90	94·70	9
10								94·70	94·90	95·25	95·00	94·80	10
11								94·70	94·95	95·40	94·70	94·90	11
12								94·70	95·00	95·50	95·00	94·92	12
13								95·10	95·05	95·20	95·00	95·00	13
14								95·10	95·00	95·00	94·90	94·90	14
15							94·70	95·00	94·95	95·00	94·80	94·90	15
16							94·75	95·00	95·05	95·20	94·90	94·92	16
17							94·85	94·90	95·10	95·10	94·90	94·90	17
18							94·75	94·90	94·95	95·40	94·70	94·80	18
19							94·70	94·90	95·00	95·30	94·80	94·80	19
20							94·70	95·15	94·95	94·95	94·70	94·92	20
21							94·70	94·90	95·00	95·05	94·60	95·00	21
22							.....	94·90	95·05	95·10	94·50	95·10	22
23							95·10	94·80	95·10	95·00	94·70	95·05	23
24							95·00	94·90	95·00	95·10	94·90	95·00	24
25							95·00	94·75	95·10	95·05	94·90	95·10	25
26							95·00	94·80	95·30	95·00	94·70	95·10	26
27							95·00	94·80	95·60	94·90	94·90	94·90	27
28							94·90	94·70	95·20	94·70	94·90	94·95	28
29							94·90	94·80	95·10	95·10	94·95	95·00	29
30							95·00	94·85	94·90	95·30	.....	95·10	30
31							94·90	.....	95·00	95·40	.....	95·00	31

Elevations of St. Lawrence River at Dumesnils Point, below Cedars, during the year 1911–12.

Table No. 40.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1								92·86	93·16	93·46	92·96	92·26	1
2								92·96	93·06	93·36	92·86	92·26	2
3								93·16	93·06	93·36	92·96	92·46	3
4								93·06	93·06	93·46	92·96	92·36	4
5								92·86	93·06	93·56	93·06	92·56	5
6								92·96	93·06	93·56	93·06	92·56	6
7								93·26	93·16	93·26	93·16	92·46	7
8								93·16	93·06	93·26	92·96	92·56	8
9								92·96	93·16	93·86	92·86	92·56	9
10								93·06	92·96	93·66	93·16	92·46	10
11								92·86	93·16	93·36	92·76	92·46	11
12								92·96	93·06	93·46	92·56	92·56	12
13								93·26	93·06	93·26	92·56	92·56	13
14							92·86	93·26	93·16	93·56	92·66	92·46	14
15							92·86	93·26	93·26	93·66	92·66	92·56	15
16							92·96	93·26	93·26	93·76	92·56	92·46	16
17							93·06	93·06	93·36	93·66	92·66	92·46	17
18							93·06	92·96	92·46	93·56	92·46	92·56	18
19							93·16	93·16	92·46	93·56	92·36	92·56	19
20							93·06	93·36	93·26	93·46	92·56	92·56	20
21							92·86	93·26	93·26	93·26	92·46	92·46	21
22							92·86	93·26	93·16	93·36	92·36	92·56	22
23							93·16	93·06	93·36	93·26	92·16	92·46	23
24							93·26	93·16	93·16	93·26	92·06	92·56	24
25							93·06	93·06	93·26	93·26	92·16	92·76	25
26							93·06	93·06	93·36	93·26	92·26	92·66	26
27							93·06	93·16	93·36	93·36	92·26	92·66	27
28							93·26	92·96	93·26	93·26	92·16	92·76	28
29							93·16	93·16	93·16	93·06	.....	92·66	29
30							93·06	93·26	93·06	93·16	.....	92·76	30
31							92·86	.....	.....	93·06	.....	92·76	31

Elevations of St. Lawrence River at Foot of Soulanges Canal, during the year 1911–12.

Table No. 41.

Day.	Apr.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	74·25	70·25	70·17	69·25	68·25	67·67	67·17	67·58	67·83	68·58	.....	74·75	1
2	74·25	70·58	70·17	69·25	68·25	67·67	67·17	67·58	67·83	68·67	.....	74·58	2
3	74·17	70·75	70·17	69·17	68·25	67·67	67·17	67·58	67·83	68·83	.....	75·42	3
4	74·17	70·83	70·17	69·17	68·25	67·67	67·17	67·58	67·83	68·92	70·00	75·75	4
5	74·08	70·92	70·08	69·08	68·17	67·67	67·17	67·58	67·92	69·00	71·42	75·67	5
6	74·00	71·00	70·08	69·08	68·17	67·67	67·17	67·58	67·92	69·25	71·00	75·67	6
7	74·00	71·08	70·08	69·00	68·17	67·58	67·17	67·58	67·92	69·75	71·17	75·33	7
8	74·00	71·17	70·08	69·00	68·17	67·58	67·17	67·67	68·00	69·92	71·25	75·17	8
9	74·08	71·25	70·00	68·92	68·17	67·58	67·17	67·67	68·00	70·08	71·42	75·00	9
10	74·08	71·25	70·00	68·92	68·08	67•58	67·17	67·67	68·00	70·25	72·58	74·83	10
11	74·17	71·25	70·00	68·83	68·08	67·58	67·25	67·67	68·08	70·17	74·83	74·83	11
12	74·25	71·17	70·00	68·83	68·08	67·58	67·25	67·67	68·08	70·00	74·08	74·75	12
13	74·58	71·17	69·92	68·75	68·08	67·58	67·25	67·67	68·25	69·83	73·92	74·25	13
14	74·67	71·08	69·92	68·75	68·00	67·58	67·25	67·67	68·50	69·67	74·00	73·75	14
15	74·75	71·00	69·92	68·75	68·00	67·50	67·25	67·67	68·50	69·50	73·92	74·08	15
16	74·83	70·92	69·83	68·67	68·00	67·50	67·25	67·67	68·58	69·25	73·67	74·00	16
17	74·67	70·92	69·83	68·67	68·00	67·50	67·25	67·67	68·58	69·17	73·33	73·83	17
18	73·92	70·83	69·83	68·67	67·92	67·50	67·25	67·67	68·58	69·17	72·92	73·42	18
19	73·25	70·83	69·83	68·67	67·92	67·50	67·25	67·75	68·58	69·50	72·33	73·08	19
20	72·75	70·83	69·75	68·59	67·92	67·50	67·25	67·75	68·58	69·50	71·92	72·83	20
21	72·00	70·75	69·75	68·59	67·92	67·50	67·25	67·75	68·58	69·58	71·92	73·00	21
22	71·58	70·75	69·75	68·59	67·83	67·50	67·25	67·75	68·58	69·58	73·17	73·42	22
23	70·67	70·67	69·75	68·59	67·83	67·25	67·25	67·75	68·50	69·67	74·33	73·75	23
24	70·00	70·67	69·67	68·59	67·83	67·25	67·50	67·75	68·50	69·75	74·00	73·17	24
25	70·00	70·58	69·67	68·50	67·83	67·25	67·50	67·75	68·50	69·92	74·00	73·00	25
26	69·92	70·58	69·67	68·50	67·75	67·25	67·50	67·75	68·50	70·17	74·00	72·92	26
27	69·92	70·50	69·58	68·50	67·75	67·25	67·50	67·75	68·50	70·67	75·17	72·83	27
28	70·00	70·50	69·58	68·50	67·75	67·25	67·50	67·83	68·50	70·58	75·83	72·33	28
29	70·08	70·25	69·50	68·25	67·75	67·17	67·50	67·83	68·50	70·50	73·00	72·00	29
30	70·08	70·25	69·50	68·25	67·67	67·17	67·50	67·83	68·50	70·17	.....	71·67	30
31	.....	70·25	.....	68·25	67·67	.....	67·50	.....	68·50	70·00	.....	72·00	31

Elevations of St. Lawrence River at Head of Lachine Canal, during the year 1911–12.

Table No. 42.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	67·25	70·33	70·00	68·42	67·33	66·92	66·58	66·50	66·83	67·50	66·75	66·33	1
2	67·33	70·42	70·00	68·42	67·33	66·83	66·58	66·50	66·83	67·67	66·83	66·67	2
3	67·67	70·50	69·83	68·42	67·25	66·83	66·58	66·50	66·67	67·67	67·17	66·58	3
4	67·67	70·58	69·83	68·33	67·17	66·83	66·58	66·50	66·67	67·67	67·17	66·33	4
5	67·67	70·58	69·83	68·33	67·17	66·83	66·58	66·67	67·67	67·67	66·92	66·17	5
6	68·50	70·58	69·67	68·25	67·17	66·83	66·58	66·67	66·83	67·67	67·17	65·83	6
7	68·17	70·67	69·42	68·25	67·17	66·83	66·58	66·67	66·83	67·75	67·50	65·67	7
8	68·92	70·67	69·50	68·25	67·17	66·83	66·67	66·67	67·00	67·50	67·33	65·67	8
9	69·33	70·75	69·50	68·17	67·17	66·83	66·67	67·67	67·00	67·75	66·75	65·67	9
10	69·50	70·75	69·42	68·17	67·17	66·75	66·58	66·67	67·17	67·50	66·67	65·67	10
11	69·83	70·75	69·33	67·83	67·00	66·75	66·58	66·67	67·17	67·25	66·33	65·67	11
12	70·17	70·75	69·33	68·00	67·00	66·67	66·58	66·67	67·33	67·17	66·42	65·67	12
13	70·25	70·75	69·42	68·00	67·17	66·67	66·58	66·67	67·42	67·17	67·17	65·67	13
14	70·33	70·67	69·50	67·83	67·17	66·75	66·50	66·67	67·42	67·17	66·92	65·58	14
15	70·42	70·67	69·50	67·83	67·17	66·67	66·50	66·67	67·42	67·17	67·17	65·58	15
16	70·42	70·67	69·50	67·83	67·17	66·67	66·50	66·67	67·58	67·17	66·92	65·58	16
17	70·50	70·67	69·33	67·92	67·25	66·67	66·50	66·75	67·75	67·17	66·83	65·58	17
18	70·33	70·42	69·17	67·92	67·25	66·67	66·50	66·83	67·75	67·17	66·33	65·58	18
19	69·83	70·33	68·67	67·92	67·17	66·67	66·50	66·83	67·67	67·42	65·92	65·58	19
20	69·42	70·33	68·67	67·92	67·17	66·67	66·58	67·17	67·67	67·42	65·50	65·58	20
21	69·33	70·17	68·67	67·83	67·17	66·67	66·58	67·17	67·67	67·42	65·25	65·58	21
22	69·17	70·08	68·67	67·75	67·17	66·67	66·58	67·17	67·67	67·50	65·25	66·33	22
23	69·00	70·08	68·50	67·67	67·17	66·67	66·58	66·92	67·75	67·50	65·08	66·33	23
24	69·08	69·83	68·50	67·58	67·17	66·67	66·67	66·92	67·75	67·50	65·42	66·58	24
25	69·08	69·92	68·50	67·58	67·08	66·67	66·67	67·00	67·75	67·42	66·33	66·58	25
26	69·08	70·00	68·50	67·58	67·00	66·67	66·67	67·00	67·83	67·17	66·33	66·00	26
27	69·25	70·08	68·50	67·58	67·00	66·67	66·67	66·92	67·83	67·17	66·00	66·00	27
28	69·25	70·00	68·50	67·50	67·00	66·67	66·67	66·92	67·33	67·00	65·83	65·83	28
29	69·42	70·00	68·42	67·50	67·00	66·67	66·67	66·83	67·00	67·00	66·17	65·75	29
30	69·67	70·00	68·42	67·50	67·00	66·67	66·67	66·83	66·33	66·83	.....	65·83	30
31	.....	70·00	.....	67·42	66·92	66·67	66·67	.....	65·50	66·75	.....	66·83	31

Elevations of St. Lawrence River at Foot of Lachine Canal, during the year 1911–12.

Table No. 43.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	30·36	24·52	24·36	22·02	20·02	19·11	18·52	18·44	19·02	20·69	34·36	29·86	1
2	29·61	25·69	24·36	21·86	20·02	19·02	18·52	18·27	19·61	22·77	33·36	29·69	2
3	29·86	25·61	24·19	21·77	19·86	18·94	18·44	18·02	19·36	23·77	33·36	30·19	3
4	30·11	25·86	24·02	21·69	19·77	18·94	18·11	18·02	19·27	24·77	32·77	30·19	4
5	30·44	25·86	24·02	21·69	19·77	18·94	18·52	18·19	19·27	26·27	32·94	30·36	5
6	30·44	25·86	23·86	21·52	19·69	19·02	18·61	18·19	19·69	28·69	32·52	30·36	6
7	30·69	25·86	23·69	21·36	19·69	19·19	18·61	18·36	19·69	31·94	33·02	30·11	7
8	31·52	25·86	23·69	21·19	19·52	19·11	18·52	18·61	19·61	32·36	34·02	30·27	8
9	32·69	25·69	23·61	20·86	19·61	18·86	18·44	18·77	19·44	36·61	33·27	30·69	9
10	32·86	25·86	23·44	20·86	19·69	18·80	18·01	18·8.	19·27	37·86	32·61	30·19	10
11	32·86	25·86	23·61	20·86	19·77	18·94	18·61	18·69	19·27	38·61	31·69	30·02	11
12	33·86	25·86	23·44	20·86	19·69	19·19	18·52	18·36	19·52	38·69	31·36	30·36	12
13	36·19	25·86	23·44	20·86	19·61	19·11	18·69	18·52	19·94	38·61	31·52	30·69	13
14	37·52	25·69	23·44	20·77	19·69	18·94	18·52	18·69	20·36	37·86	32·11	30·19	14
15	37·52	25·52	23·52	20·69	19·86	18·69	18·11	18·69	20·61	37·69	31·86	30·69	15
16	34·86	25·19	23·52	20·52	20·11	18·86	18·19	18·86	20·86	37·86	32·61	30·69	16
17	34·69	25·19	23·44	20·52	20·02	18·94	18·52	18·86	20·86	37·69	32·36	29·94	17
18	38·94	24·86	23·19	20·61	19·86	19·02	18·36	18·69	20·69	37·19	31·86	31·61	18
19	38·44	25·69	23·19	20·52	19·86	18·94	18·52	18·52	20·69	36·86	31·44	30·69	19
20	37·69	24·52	23·19	20·44	19·61	18·77	18·52	18·86	20·19	36·36	32·52	30·86	20
21	37·19	24·11	23·11	20·36	19·52	18·77	18·52	19·11	20·02	36·27	31·36	29·86	21
22	33·69	24·02	22·86	20·36	19·52	18·77	18·36	19·02	20·02	36·11	31·19	29·52	22
23	30·77	24·02	22·86	20·19	19·69	18·86	18·36	18·86	20·02	35·94	30·02	30·69	23
24	28·36	23·86	22·52	20·19	19·61	19·02	18·52	18·80	20·36	36·02	29·36	30·86	24
25	26·52	23·86	22·36	20·19	19·61	19·19	18·52	19·02	20·36	35·86	30·44	30·86	25
26	25·52	24·19	22·19	20·44	19·69	19·19	18·61	18·86	20·36	35·77	30·27	30·19	26
27	24·19	24·27	22·19	20·44	19·61	18·86	18·52	18·86	20·52	35·36	30·19	30·86	27
28	23·94	24·27	22·19	20·44	19·44	18·86	18·36	19·02	20·19	34·52	30·02	30·61	28
29	24·02	24·52	22·19	20·44	19·52	18·77	18·36	18·86	20·36	34·02	29·52	30·77	29
30	24·36	24·61	22·19	20·02	19·52	18·77	18·27	18·94	19·86	33·94	.....	30·36	30
31	.....	24·52	.....	20·02	19·36	.....	18·02	.....	20·69	34·11	.....	30·44	31

Elevations of St. Lawrence River at Lanoraie, Que., during the year 1911–12.

Table No. 44.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1					14·08	13·08	12·48	12·08	12·88	15·98	19·78	18·68	1
2					14·08	12·88	12·68	11·98	13·68	17·68	19·68	18·98	2
3					13·58	12·78	12·88	11·88	13·58	19·58	19·48	19·08	3
4					13·48	12·68	12·78	11·68	13·48	20·38	19·38	19·13	4
5					13·38	12·58	12·58	11·88	13·98	20·68	19·28	19·18	5
6					13·38	12·63	12·58	12·08	14·48	20·88	19·28	19·28	6
7					13·33	12·68	12·63	12·48	14·38	20·68	19·18	19·28	7
8					13·28	12·98	12·58	12·48	14·08	20·18	18·68	19·18	8
9					13·38	12·93	12·53	12·98	13·98	20·58	19·88	19·38	9
10					13·43	12·98	12·78	13·18	13·78	20·78	19·58	19·33	10
11					13·48	13·08	12·83	13·08	13·68	20·08	19·28	19·08	11
12					13·68	13·18	12·88	12·68	13·78	19·98	18·88	19·18	12
13					13·58	13·28	12·98	12·48	14·18	19·88	18·88	19·28	13
14					13·68	13·18	12·78	12·38	14·68	19·78	19·13	19·28	14
15					13·88	13·23	12·53	12·58	14·98	19·88	19·48	19·28	15
16					14·18	13·08	12·27	12·78	15·48	19·98	19·78	19·38	16
17					14·38	13·13	12·58	12·58	15·58	20·28	19·78	19·28	17
18					14·48	13·18	12·48	12·88	15·08	20·28	19·98	19·28	18
19					14·38	13·13	12·48	12·38	14·88	20·18	19·98	19·38	19
20					14·38	13·98	12·98	12·58	12·58	14·48	20·28	20·08	19·48	20
21					14·08	13·48	13·03	12·68	12·78	13·98	19·98	19·88	19·38	21
22					14·28	13·38	12·98	12·73	12·93	14·08	20·08	19·58	19·08	22
23					14·18	13·48	13·03	12·68	12·98	14·28	19·98	19·28	19·33	23
24					14·38	13·58	12·88	12·48	12·93	14·48	20·28	18·78	19·63	24
25					13·98	13·48	13·28	12·58	13·03	14·58	20·38	19·23	19·68	25
26					14·08	13·68	13·48	12·63	13·08	14·48	20·48	18·93	19·68	26
27					14·18	13·78	13·38	12·48	12·98	14·88	20·48	18·88	19·68	27
28					14·28	13·68	13·03	12·38	13·08	14·28	20·18	18·78	19·68	28
29					14·38	13·58	12·98	11·88	12·88	13·78	19·78	18·68	19·68	29
30					13·98	13·48	12·68	11·78	12·83	13·98	19·48	.....	19·68	30
31					13·98	13·28	.....	11·88	.....	14·08	19·58	.....	19·68	31

ELEVATIONS of St. Lawrence River at Sorel, Que., during the year 1911-12.

TABLE NO. 45.

Day.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Day.
1	16·33	18·58	17·83	15·41	13·66	12·91	12·25	11·83	12·49	15·75	18·10	17·35	1
2	16·16	18·83	17·66	15·33	13·66	12·58	11·74	11·66	13·16	17·25	18·10	17·50	2
3	16·00	20·00	17·58	15·16	13·33	12·50	11·83	11·58	13·42	17·92	18·00	17·60	3
4	16·00	20·16	17·41	14·91	13·16	12·50	11·83	11·58	13·16	17·83	17·90	17·70	4
5	16·00	20·16	17·33	14·74	13·16	12·33	12·08	11·49	13·49	18·07	17·85	17·75	5
6	16·08	19·91	17·00	14·58	13·50	12·33	12·25	11·83	13·99	18·25	17·85	17·85	6
7	16·00	19·74	16·83	14·50	13·00	12·66	12·25	12·25	14·16	18·16	17·75	17·85	7
8	16·41	19·50	16·58	14·25	13·00	12·74	12·25	12·25	13·83	17·92	17·95	17·85	8
9	17·16	19·25	16·50	14·25	13·08	12·66	12·25	12·58	13·75	18·58	18·30	17·85	9
10	18·08	19·33	16·50	14·08	13·08	12·83	12·58	12·16	13·66	18·49	18·10	17·85	10
11	19·08	19·50	16·66	14·08	13·25	12·83	12·58	12·92	13·58	18·16	18·10	17·85	11
12	19·58	19·58	16·83	14·08	13·33	13·00	12·58	12·49	13·58	17·92	17·60	17·70	12
13	20·08	19·33	16·91	14·08	13·25	13·08	12·75	12·25	13·83	17·66	17·45	17·75	13
14	20·25	19·25	16·83	14·08	13·08	13·00	12·50	11·99	14·16	17·58	17·60	17·85	14
15	20·83	19·00	16·91	14·08	13·58	12·83	12·25	12·25	14·58	17·49	17·85	17·75	15
16	21·33	18·83	16·83	14·08	13·83	12·74	12·25	12·33	14·92	17·75	18·10	17·75	16
17	22·00	18·58	16·58	13·91	13·91	12·74	12·08	12·33	14·08	18·16	18·20	17·85	17
18	21·74	18·33	16·58	14·00	13·58	12·74	12·16	12·58	14·75	18·25	18·45	17·85	28
19	21·00	18·08	16·41	13·83	13·50	12·74	12·16	12·49	14·58	18·25	18·45	17·95	19
20	20·50	17·74	16·33	13·74	13·41	12·58	12·25	12·25	14·33	18·33	18·50	18·00	20
21	19·91	17·50	16·25	13·58	13·08	12·58	12·41	12·58	13·66	18·16	18·50	17·10	21
22	20·25	17·16	16·08	13·58	13·00	13·00	12·41	12·75	13·83	18·18	18·20	17·20	22
23	19·41	17·25	15·83	13·58	13·08	13·00	12·33	12·75	14·08	18·40	18·10	17·20	23
24	18·25	17·08	15·74	13·58	13·16	12·91	12·33	12·75	14·08	18·45	17·60	17·60	24
25	17·83	17·08	15·83	13·58	13·25	13·08	12·50	12·83	14·25	18·50	17·55	17·60	25
26	17·50	17·16	15·58	13·66	13·50	13·33	12·33	12·75	14·16	18·60	17·50	17·50	26
27	17·33	17·41	15·58	13·74	13·50	13·08	12·33	12·75	14·66	18·50	17·50	17·50	27
28	17·16	17·58	15·58	13·83	13·41	12·91	12·16	12·66	13·99	18·35	17·50	17·50	28
29	17·66	17·83	15·58	13·91	13·25	12·66	11·83	12·58	13·66	18·20	17·45	17·45	29
30	18·25	17·91	15·58	13·74	13·25	12·50	11·50	12·49	13·66	18·00	.....	17·25	30
31	.....	18·00	.....	13·74	13·08	.....	11·50	.....	14·25	18·00	.....	17·25	31

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Discharge measurements of Ottawa River at Timiskaming, Que.

Date.	Width.	Gauge height.	Discharge.
1911.	Feet.	Feet.	Sec.-ft.
Sept. 26	535	570·26	9,842
Sept. 27	535	570·12	8,504

Discharge measurements of Petawawa River at Petawawa, Ont.

Date.	Width.	Gauge height.	Discharge.
1911.	Feet.	Feet.	Sec.-feet.
Dec. 6	124	437·75	337

Discharge measurements of Coulonge River above Coulonge Chute, Que.

Date.	Width.	Gauge height.	Discharge.
1911.	Feet.	Feet.	Sec.-feet.
Nov. 30	240	104·78	1,750

Discharge measurements of Ottawa River at La Passe, Ont.

Date.	Width.	Gauge height.	Discharge.
1911.	Feet.	Feet.	Sec.-feet.
Nov. 28	1125·2	344·55	21,163

Discharge measurements of Madawaska River above Clay Bank Bridge, Ont.

Date.	Width.	Area of section.	Mean velocity.	Gauge height.	Discharge.
1911.	Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Apr. 19	340·1	5393·9	1·485	263·43	8,010
Dec 1	314·3	.....	.....	260·51	1,134

DISCHARGE measurements of Ottawa River above the Chaudière Falls.

Date.	Width.	Gauge height.	Discharge.	Remarks.
1911.	Feet.	Feet.	Sec.-ft.	
Nov. 16	1,444	190·92	19,960	Above C.P.Ry. bridge

DISCHARGE measurements of Rideau River near Hurdman's Bridge, Ont.

Date.	Width.	Area of section.	Mean velocity.	Discharge.
1911.	Feet.	Sq. ft.	Ft. per sec.	Sec.-ft.
Dec. 15	382	1132·7	·52	594
1912.				
Jan. 16	385	665	·64	430
Mar. 7				392

DISCHARGE measurements of Desert River above Maniwaki, Que.

Date.	Width.	Discharge.
1911.	Feet.	Sec.-ft.
Oct. 31	183	545

DISCHARGE measurements of Gatineau River at Ironsides and Kirks Ferry, Que.

Date.	Width.	Area of section.	Mean velocity.	Gauge height.	Discharge.
1911.	Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Oct. 26	256·8	2170·9	1·934	204·55	4,204
Nov. 22	234				6,824
1912.					
Jan. 11	367			203·70	5,351
Mar. 8		3792·3	1·063	204·75	4,031

Discharge measurements of Ottawa River at Besserer's Grove, Ont.

Date.	Width.	Mean velocity.	Gauge height.	Discharge.
1912.	Feet.	Ft. per sec.	Feet.	Sec.-ft.
Jan. 10	2,040	.....	132·22	31,487
" 25	1,500	0·678	129·89	19,150
Mar. 6	1,552	.....	130·45	21,767

Discharge measurements of Du Lièvre River above Buckingham, Que.

Date.	Width.	Area of section.	Mean velocity.	Gauge height.	Discharge.
1911.	Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.
Apr. 13	356	4158·7	·792	426·80	3,295
June 3	299	6,874	1·73	431·90	11,900

Discharge measurements of South Nation River at Plantagenet Springs, Ont.

Date.	Width.	Area of section.	Mean velocity.	Gauge height.	Discharge.	Remarks.
1911.	Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.	
April 22	376·5	1304·9	2·873	149·50	3,749	
June 1	162	152·31	1·36	145·90	208	
1912.						
Mar. 15	.....	52·12	1·04	145·70	54	
.....	*	*	*	163·20	40,600	Highest known water.

*Estimated.

Discharge measurements of Rouge River above Table Falls, Que.

Date.	Width.	Gauge height.	Discharge.
1911.	Feet.	Feet.	Sec.-ft.
Dec. 14	255	361·53	6,427

Discharge measurements of Ottawa River near Carillon, Que.

Date.	Width.	Area of section.	Mean velocity.	Gauge height.	Discharge.	Remarks.
1911.	Feet.	Sq. ft.	Ft. per sec.	Feet.	Sec.-ft.	
July 21	2,457·9	56,590	.....	85·92	44,274	Gauge Upper Carillon.
Oct. 19	2,231	54,365	0·398	83·92	21,630	" " "

Discharge measurements of St. Lawrence River between Lake St. Francis and Lanoraie.

Date.	Area of Section.	Mean Velocity.	Discharge.	Locality.
1910.	Sq. ft.	Ft. per. sec.	Sec.-ft.	
Aug. 26	90,770	2·90	263,500	Below Cedar rapids.
Sept. 1	93,850	2·73	257,000	Above Cedar Rapids.
" 2	2,389	2·99	7,150	M. C. C. tail race, Valleyfield.
" 26	118,582	2·30	273,000	Lanoraie.
1911.				
July 6	84,774	2·67	226,550	Above Cedars.
" 7	.....	.....	6,703	M. C. C. tail race, Valleyfield.
" 13	132,718	2·23	296,350	Lanoraie.
Oct. 3	80,081	2·66	213,500	Above Cedars.
" 5	2,546	2·99	7,630	M. C. C. tail race, Valleyfield.
" 6	23,528	2·93	68,950	Ile aux Vaches channel.
" 9	115,150	2·15	248,250	Lanoraie.
" 16	23,728	3·02	71,860	Ile aux Vaches channel.
" 13	2,497	3·13	7,826	M. C. C. tail race, Valleyfield.
" 17	80,470	2·67	215,500	Above Cedars.

Discharge Rating table for Quinze River.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
853·00	.....	....	855·00	7,850	500	857·00	20,100	800	859·00	45,500	2,000
853·10	.....	.....	855·10	8,350	500	857·10	20,900	800	859·10	47,500	2,200
853·20	.....	.....	855·20	8,850	500	857·20	21,700	850	859,20	49,700	2,300
853·30	.....	.....	855·30	9,350	500	857·30	22,550	900	859·30	52,000	2,200
853·40	.....	.....	855·40	9,850	550	857·40	23,450	900	859·40	54,200	2,400
853·50	1,150	300	855·50	10,400	550	857·50	24,350	950	859·50	56,600	2,600
853·60	1,450	350	855·60	10,950	550	857·60	25,300	1,000	859·60	59,200	2,600
853·70	1,800	400	855·70	11,500	550	857·70	26,350	1,050	859·70	61,800	2,700
853·80	2,200	450	855·80	12,050	550	857·80	27,400	1,100	859·80	64,500	2,700
853·90	2,650	450	855·90	12,600	600	857·90	28,500	1,150	859·90	67,200	2,800
854·00	3,100	450	856·00	13,200	650	858·00	29,650	1,150	860·00	70,000	3,000
854·10	3,550	450	856·10	13,850	650	858·10	30,800	1,300	860·10	73,000	.....
854·20	3,900	450	856·20	14,500	650	858·20	32,000	1,500	860·20	.....	.....
854·30	4,350	500	856·30	15,150	600	858·30	33,500	1,500	860·30	.....	.....
854·40	4,850	500	856·40	15,750	650	858·40	35,000	1,500	860·40	.....	.....
854·50	5,350	500	856·50	16,400	700	858·50	36,500	1,500	860·50	.....	.....
854·60	5,850	500	856·60	17,100	700	858·60	38,000	1,700	860·60	.....	.....
854·70	6,350	500	856·70	17,800	700	858·70	39,700	1,800	860·70	.....	.....
854·80	6,850	500	856·80	18,500	800	858·80	41,500	2,000	860·80	.....	.....
854·90	7,350	500	856·90	19,300	800	858·90	43,500	2,000	860·90	.....	.....

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Discharge Rating table for Montreal River at Latchford, Ont.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
894·00	.....	.....	898·00	4,314	182	902·00	11,607	182
894·10	1,170	10	898·10	4,496	182	902·10	11,789	183
894·20	1,180	20	898·20	4,678	183	902·20	11,972	182
894·30	1,200	20	898·30	4,861	182	902·30	12,154	182
894·40	1,220	20	898·40	5,043	182	902·40	12,336	183
894·50	1,240	20	898·50	5,225	183	902·50	12,519	182
894·60	1,260	30	898·60	5,408	182	902·60	12,701	182
894·70	1,290	30	898·70	5,590	182	902·70	12,883	183
894·80	1,320	30	898·80	5,772	183	902·80	13,066	182
894·90	1,350	30	898·90	5,955	182	902·90	13,248	182
895·00	1,380	30	899·00	6,137	182	903·00	13,430	183
895·10	1,410	30	899·10	6,319	183	903·10	13,613	182
895·20	1,440	30	899·20	6,502	182	903·20	13,795	182
895·30	1,470	40	899·30	6,684	182	903·30	13,977	183
895·40	1,510	40	899·40	6,866	183	903·40	14,160	182
895·50	1,550	40	899·50	7,049	182	903·50	14,342	182
895·60	1,590	40	899·60	7,231	182	903·60	14,524	183
895·70	1,630	40	899·70	7,413	183	903·70	14,707	182
895·80	1,670	40	899·80	7,596	182	903·80	14,889	182
895·90	1,710	40	899·90	7,778	182	903·90	15,072	183
896·00	1,750	50	900·00	7,960	183	904·00	15,254	182
896·10	1,800	50	900·10	8,143	182	904·10	15,436	182
896·20	1,850	60	900·20	8,325	182	904·20	15,618	183
896·30	1,910	60	900·30	8,507	183	904·30	15,801	182
896·40	1,970	60	900·40	8,690	182	904·40	15,983	182
896·50	2,030	70	900·50	8,872	182	904·50	16,165	183
896·60	2,100	100	900·60	9,054	183	904·60	16,348	182
896·70	2,200	100	900·70	9,237	182	904·70	16,530	182
896·80	2,300	100	900·80	9,419	182	904·80	16,712	183
896·90	2,400	120	900·90	9,601	183	904·90	16,895	.....
897·00	2,520	160	901·00	9,784	182	.....	.....	.....
897·10	2,680	180	901·10	9,966	182	.....	.....	.....
897·20	2,860	180	901·20	10,148	183	.....	.....	.....
897·30	3,040	180	901·30	10,331	182	.....	.....	.....
897·40	3,220	182	901·40	10,513	182	.....	.....	.....
897·50	3,402	182	901·50	10,695	183	.....	.....	.....
897·60	3,584	183	901·60	10,878	182	.....	.....	.....
897·70	3,767	182	901·70	11,060	182	.....	.....	.....
897·80	3,949	182	901·80	11,242	183	.....	.....	.....
897·90	4,131	183	901·90	11,425	182	.....	.....	.....

DISCHARGE Rating table for Ottawa River at Timiskaming, Que., May 29, 1912.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
568·00	2,760	342	570·00	9,650	360	572·00	17,160	418	574·00	26,200	500
568·10	3,102	342	570·10	10,010	360	572·10	17,578	418	574·10	26,700	500
568·20	3,444	342	570·20	10,370	360	572·20	17,996	418	574·20	27,200	535
568·30	3,786	342	570·30	10,730	360	572·30	18,414	418	574·30	27,735	535
568·40	4,128	342	570·40	11,090	360	572·40	18,832	418	574·40	28,270	535
568·50	4,470	342	570·50	11,450	370	572·50	19,250	436	574·50	28,805	535
568·60	4,812	342	570·60	11,820	370	572·60	19,686	436	574·60	29,340	580
568·70	5,154	342	570·70	12,190	370	572·70	20,122	436	574·70	29,920	580
568·80	5,496	342	570·80	12,560	370	572·80	20,558	436	574·80	30,500	600
568·90	5,838	342	570·90	12,930	370	572·90	20,994	436	574·90	31,100	600
569·00	6,180	342	571·00	13,300	380	573·00	21,430	467	575·00	31,700	620
569·10	6,522	342	571·10	13,680	380	573·10	21,897	467	575·10	32,320	620
569·20	6,864	342	571·20	14,060	380	573·20	22,364	467	575·20	32,940	620
569·30	7,206	342	571·30	14,440	380	573·30	22,831	467	575·30	33,560	620
569·40	7,548	350	571·40	14,820	387	573·40	23,298	480	575·40	34,180	620
569·50	7,898	350	571·50	15,207	387	573·50	23,778	480	575·50	34,800	652
569·60	8,248	350	571·60	15,594	387	573·60	24,258	481	575·60	35,452	652
569·70	8,598	350	571·70	15,981	387	573·70	24,739	481	575·70	36,104	652
569·80	8,948	351	571·80	16,368	396	573·80	25,220	490	575·80	36,756	652
569·90	9,299	351	571·90	16,764	396	573·90	25,710	490	575·90	37,408	652
576·00	38,060	712	578·00	54,500	990	580·00	76,060	1,204	582·00	101,640	1,392
576·10	38,772	712	578·10	55,490	990	580·10	77,264	1,204	582·10	103,032	1,392
576·20	39,484	712	578·20	56,480	990	580·20	78,468	1,204	582·20	104,424	1,392
576·30	40,196	712	578·30	57,470	990	580·30	79,672	1,204	582·30	105,816	1,392
576·40	40,908	712	578·40	58,460	990	580·40	80,876	1,204	582·40	107,208	1,392
576·50	41,620	786	578·50	59,450	1,040	580·50	82,080	1,264	582·50	108,600	1,400
576·60	42,406	786	578·60	60,490	1,040	580·60	83,344	1,264	582·60	110,000	1,400
576·70	43,192	786	578·70	61,530	1,040	580·70	84,608	1,264	582·70	111,400	1,400
576·80	43,978	786	578·80	62,570	1,040	580·80	85,872	1,264	582·80	112,800	1,400
576·90	44,764	786	578·90	63,610	1,040	580·90	87,136	1,264	582·90	114,200	1,400
577·00	45,550	855	579·00	64,650	1,106	581·00	88,400	1,312	583·00	115,600	.....
577·10	46,405	855	579·10	65,756	1,106	581·10	89,712	1,312	583·10	.....	.....
577·20	47,260	860	579·20	66,862	1,106	581·20	91,024	1,312	583·20	.....	.....
577·30	48,120	860	579·30	67,968	1,106	581·30	92,336	1,312	583·30	.....	.....
577·40	48,980	860	579·40	69,074	1,106	581·40	93,648	1,312	583·40	.....	.....
577·50	49,840	900	579·50	70,180	1,176	581·50	94,960	1,336	583·50	.....	.....
577·60	50,740	900	579·60	71,356	1,176	581·60	96,296	1,336	583·60	.....	.....
577·70	51,640	953	579·70	72,532	1,176	581·70	97,632	1,336	583·70	.....	.....
577·80	52,593	953	579·80	73,708	1,176	581·80	98,968	1,336	583·80	.....	.....
577·90	53,546	954	579·90	74,884	1,176	581·90	100,304	1,336	583·90	.....	.....

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Discharge Rating table for Ottawa River at Klock station, Ont.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
475·00	5,300	250	479·00	17,900	350	483·00	34,775	475	487·00	55,500	525
475·10	5,550	250	479·10	18,250	350	483·10	35,250	475	487·10	56,025	525
475·20	5,800	250	479·20	18,600	350	483·20	35,725	475	487·20	56,550	525
475·30	6,050	300	479·30	18,950	350	483·30	36,200	500	487·30	57,075	525
475·40	6,350	300	479·40	19,300	350	483·40	36,700	500	487·40	57,600	525
475·50	6,650	300	479·50	19,650	350	483·50	37,200	500	487·50	58,125	525
475·60	6,950	350	479·60	20,000	350	483·60	37,700	500	487,60	58,650	525
475·70	7,300	350	479·70	20,350	350	483·70	38,200	500	487·70	59,175	525
475·80	7,650	300	479·80	20,700	350	483·80	38,700	525	487·80	59,700	525
475·90	7,950	350	479·90	21,000	375	483·90	39,225	525	487·90	60,225	525
476·00	8,300	350	480·00	21,375	375	484·00	39,750	525	488·00	60,750	525
476·10	8,650	300	480·10	21,750	400	484·10	40,275	525	488·10	61,275	525
476·20	8,950	300	480·20	22,200	400	484·20	40,800	525	488·20	61,800	525
475·30	9,250	300	480·30	22,600	400	484·30	41,325	525	488·30	62,325	525
476·40	9,550	300	480·40	23,000	400	484·40	41,850	525	488·40	62,850	550
476·50	9,850	300	480·50	23,400	400	484·50	42,375	525	488·50	63,400	550
476·60	10,150	300	480·60	23,800	425	484·60	42,900	525	488·60	63,950	550
476·70	10,450	300	480·70	24,225	425	484·70	43,425	525	488·70	64,500	550
476·80	10,750	300	480·80	24,650	425	484·80	43,950	525	488·80	65,050	550
476·90	11,050	300	480·90	25,075	425	484·90	44,475	525	488·90	65,600	550
477·00	11,350	300	481·00	25,500	450	485·00	45,000	525	489·00	66,150	550
477·10	11,650	300	481·10	25,950	450	485·10	45,525	525	489·10	66,700	550
477·20	11,950	300	481·20	26,400	450	485·20	46,050	525	489·20	67,250	550
477·30	12,250	300	481·30	26,850	450	485·30	46,575	525	489·30	67,800	575
477·40	12,550	325	481·40	27,300	450	485·40	47,100	525	489·40	68,375	575
477·50	12,875	325	481·50	27,750	450	485·50	47,625	525	489·50	68,950	575
477·60	13,200	325	481·60	28,200	450	485·60	48,150	525	489·60	69,525	575
477·70	13,525	325	481·70	28,650	450	485·70	48,675	525	489·70	70,100	575
477·80	13,875	325	481·80	29,100	450	485·80	49,200	525	489·80	70,675	575
477·90	14,200	325	481·90	29,550	475	485·90	49,725	525	489·90	71,250	575
478·00	14,525	325	482·00	30,025	475	486·00	50,250	525	490·00	71,825	575
478·10	14,850	325	482·10	30,500	475	486·10	50,775	525	490·10	72,400	575
478·20	15,175	325	482·20	30,975	475	486·20	51,300	525	490·20	72,975	575
478·30	15,500	325	482·30	31,450	475	486·30	51,825	525	490·30	73,550	575
478·40	15,825	325	482·40	31,925	475	486·40	52,350	525	490·40	74,125	575
478·50	16,150	350	482·50	32,400	475	486·50	52,875	525	490·50	74,700	575
478·60	16,500	350	482·60	32,875	475	486·60	53,400	525	490·60	75,275	575
478·70	16,850	350	482·70	33,350	475	486·70	53,925	525	490·70	75,850	575
478·80	17,200	350	482·80	33,825	475	486·80	54,450	525	490·80	76,425	575
478·90	17,550	350	482·90	34,300	475	486·90	54,975	525	490·90	77,000	598

DISCHARGE Rating table for Ottawa River at Klock station, Ont.—*Continued.*

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet.	Sec.-ft.	Sec.-ft.
491·00	77,598	598	495·00	101,418	598	497·00	113,378	598	499·00	125,238	598
491·10	78,196	598	495·10	102,016	598	497·10	113,976	598	499·10	125,836	598
491·20	78,794	598	495·20	102,614	598	497·20	114,574	598	499·30	126,434	598
491·30	79,392	598	495·30	103,212	598	497·30	115,172	598	499·40	127,032	598
491·40	79,990	598	495·40	103,810	598	497·40	115,770	598	499·40	127,630	598
491·50	80,588	598	495·50	104,408	598	497·50	116,368	598	499·50	128,228	598
491·60	81,186	598	495·60	105,006	598	497·60	116,966	598	499·60	128,826	598
491·70	81,784	598	495·70	105,604	598	497·70	117,564	598	499·70	129,424	598
491·80	82,382	598	495·80	106,202	598	497·80	118,162	598	499·80	130,022	598
491·90	82,980	598	495·90	106,800	598	497·90	118,760	598	499·90	130,620	598
492·00	83,478	598	496·00	107,398	598	498·00	119,358	598	500·00	131,218	598
492·10	84,076	598	496·10	107,996	598	498·10	119,956	598	500·10	131,816	598
492·20	84,674	598	496·20	108,594	598	498·20	120,554	598	500·20	132,414	598
492·30	85,272	598	496·30	109,192	598	498·30	121,152	598	500·30	133,012	
492·40	85,870	598	496·40	109,790	598	498·40	121,750	598	500·40		
492·50	86,468	598	496·50	110,388	598	498·50	122,348	598			
492·60	87,066	598	496·60	110,986	598	498·60	122,946	598			
492·70	87,664	598	496·70	111,584	598	498·70	123,544	598			
492·80	88,262	598	496·80	112,182	598	498·80	124,142	598			
492·90	88,860	598	496·90	112,780	598	498·90	124,740	598			
493·00	89,458	598									
493·10	90,056	598									
493·20	90,654	598									
493·30	91,252	598									
493·40	91,850	598									
493·50	92,448	598									
493·60	93,046	598									
493·70	93,644	598									
493·80	94,242	598									
493·90	94,840	598									
494·00	95,438	598									
494·10	96,036	598									
494·20	96,634	598									
494·30	97,232	598									
494·40	97,830	598									
494·50	98,428	598									
494·60	99,026	598									
494·70	99,624	598									
494·80	100,222	598									
494·90	100,820	598									

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Discharge Rating table for Petawawa River at Petawawa.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
436·00	.....	.....	438·00	820	70	440·00	3,490	170	442·00	6,890	170
436·10	.....	.....	438·10	890	80	440·10	3,660	170	442·10	7,060	170
436·20	.....	.....	438·20	970	90	440·20	3,830	170	442·20	7,230	170
436·30	.....	.....	438·30	1,060	100	440·30	4,000	170	442·30	7,400	170
436·40	.....	.....	438·40	1,160	100	440·40	4,170	170	442·40	7,570	170
436·50	160	10	438·50	1,260	110	440·50	4,340	170	442·50	7,740	
436·60	170	20	438·60	1,370	130	440·60	4,510	170	442·60		
436·70	190	30	438·70	1,500	130	440·70	4,680	170	442·70		
436·80	230	30	438·80	1,630	130	440·80	4,850	170	442·80		
436·90	260	30	438·90	1,760	130	440·90	5,020	170	442·90		
437·00	290	30	439·00	1,890	130	441·00	5,190	170	443·00		
437·10	320	40	439·10	2,020	130	441·10	5,360	170	443·10		
437·20	360	40	439·20	2,150	150	441·20	5,530	170	443·20		
437·30	400	50	439·30	2,300	170	441·30	5,700	170	443·30		
437·40	450	50	439·40	2,470	170	441·40	5,870	170	443·40		
437·50	500	60	439·50	2,640	170	441·50	6,040	170	443·50		
437·60	560	60	439·60	2,810	170	441·60	6,210	170	443·60		
437·70	620	60	439·70	2,980	170	441·70	6,380	170	443·70		
437·80	680	70	439·80	3,150	170	441·80	6,550	170	443·80		
437·90	750	70	439·90	3,320	170	441·90	6,720	170	443·90		

Discharge Rating table for Black River at Waltham, Que.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet.	Sec.-ft	Sec.-ft.
2·00	300	30	4·00	2,798	266	6·00	8,118	
2·10	330	40	4·10	3,064	266	6·10	8,384	266
2·20	370	40	4·20	3,330	266	6·20	8,650	266
2·30	410	50	4·30	3,596	266	6·30	8,916	266
2·40	460	60	4·40	3,862	266	6·40	9,182	266
2·50	520	60	4·50	4,128	266	6·50	9,448	266
2·60	580	60	4·60	4,394	266	6·60	9,714	266
2·70	640	70	4·70	4,660	266	6·70	9,980	266
2·80	710	90	4·80	4,926	266	6·80	10,346	266
2·90	800	90	4·90	5,192	266	6·90	10,612	266
3·00	890	100	5·00	5,458	266	7·00	10,878	266
3·10	990	110	5·10	5,724	266	7·10		
3·20	1,100	130	5·20	5,990	266	7·20		
3·30	1,230	160	5·30	6,256	266	7·30		
3·40	1,390	180	5·40	6,522	266	7·40		
3·50	1,570	200	5·50	6,788	266	7·50		
3·60	1,770	230	5·60	7,054	266	7·60		
3·70	2,000	266	5·70	7,320	266	7·70		
3·80	2,266	266	5·80	7,586	266	7·80		
3·90	2,532	266	5·90	7,852	266	7·90		

Discharge Rating table for Coulonge River at Coulonge Chute, Que.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Feet	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
1·00	.....	.....	3·00	1,100	80	5·00	5,344	369	7·00	12,724	369	9·00	20,104	369
1·10	.....	.....	3·10	1,180	80	5·10	5,713	369	7·10	13,093	369	9·10	20,473	369
1·20	.....	.....	3·20	1,260	80	5·20	6,082	369	7·20	13,462	369	9·20	20,842	369
1·30	.....	.....	3·30	1,340	100	5·30	6,451	369	7·30	13,831	369	9·30	21,211	369
1·40	.....	.....	3·40	1,440	110	5·40	6,820	369	7·40	14,200	369	9·40	21,580	369
1·50	260	40	3·50	1,550	110	5·50	7,189	369	7·50	14,569	369	9·50	21,949	369
1·60	300	50	3·60	1,660	110	5·60	7,558	369	7·60	14,938	369	9·60	22,318	369
1·70	350	50	3·70	1,770	130	5·70	7,927	369	7·70	15,307	369	9·70	22,687	369
1·80	400	50	3·80	1,900	150	5·80	8,296	369	7·80	15,676	369	9·80	23,056	369
1·90	450	50	3·90	2,050	150	5·90	8,665	369	7·90	16,045	369	10·90	23,425	369
2·00	500	50	4·00	2,200	170	6·00	9,034	369	8·00	16,414	369	10·00	23,794	369
2·10	550	50	4·10	2,370	200	6·10	9,403	369	8·10	16,783	369	10·10	24,163	369
2·20	600	50	4·20	2,570	270	6·20	9,772	369	8·20	17,152	369	10·20	24,532	369
2·30	650	50	4·30	2,840	290	6·30	10,141	369	8·30	17,521	369	10·30	24,901	369
2·40	700	50	4·40	3,130	369	6·40	10,510	369	8·40	17,890	369	10·40	25,270	369
2·50	750	70	4·50	3,499	369	6·50	10,879	369	8·50	18,259	369	10·50	25,639	369
2·50	820	70	4·60	3,868	369	6·60	11,248	369	8·60	18,628	369	10·60	26,008	369
2·70	890	70	4·70	4,237	369	6·70	11,617	369	8·70	18,997	369	10·70	26,377	369
2·80	960	70	4·80	4,606	369	6·80	11,986	369	8·80	19,366	369	10·80	26,746	369
2·90	1,030	70	4·90	4,975	369	6·90	12,355	369	8·90	19,735	369	10·90	27,115	

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Discharge Rating table for Ottawa River at La Passe, Ont.

Gauge height	Discharge	Difference.	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet.	Sec.-ft.	Sec.ft.	Feet.	Sec.-ft.	Sec.-ft.	Feet.	Sec.ft.	Sec.ft.	Feet.	Sec.-ft.	Sec.-ft.
342·00	.....	615	346·00	32,685	615	350·00	63,000	1,000	354·00	128,759	1,833
342·10	8,700	615	346·10	33,300	615	350·10	64,000	1,000	354·10	130,592	1,833
342·20	9,315	615	346·20	33,915	625	350·20	65,000	1,100	354·20	132,425	1,833
342·30	9,930	615	346·30	34,540	625	350·30	66,100	1,100	354·30	134,258	1,833
342·40	10,545	615	346·40	35,165	625	350·40	67,200	1,200	354·40	136,091	1,833
342·50	11,160	615	346·50	35,790	630	350·50	68,400	1,300	354·50	137,924	1,833
342·60	11,775	615	346·60	36,420	640	350·60	69,700	1,400	354·60	139,757	1,833
342·70	12,390	615	346·70	37,060	640	350·70	71,100	1,400	354·70	141,590	1,833
342·80	13,005	615	346·80	37,700	640	350·80	72,500	1,400	354·80	143,423	1,833
342·90	13,620	615	346·90	38,340	660	350·90	73,900	1,400	354·90	145,256	1,833
343·00	14,235	615	347·00	39,000	660	351·00	75,300	1,500	355·00	147,089	1,833
343·10	14,850	615	347·10	39,660	670	351·10	76,800	1,500	355·10	148,922	1,833
343·20	15,465	615	347·20	40,330	680	351·20	78,300	1,600	355·20	150,755	1,833
343·30	16,080	615	347·30	41,010	690	351·30	79,900	1,600	355·30	152,588	1,833
343·40	16,695	615	347·40	41,700	700	351·40	81,500	1,700	355·40	154,421	1,833
343·50	17,310	615	347·50	42,400	700	351·50	83,200	1,700	355·50	156,254	1,833
343·60	17,925	615	347·60	43,100	710	351·60	84,900	1,700	355·60	158,087	1,833
343·70	18,540	615	347·70	43,810	710	351·70	86,600	1,833	355·70	159,920	1,833
343·80	19,155	615	347·80	44,520	720	351·80	88,433	1,833	355·80	161,753	1,833
343·90	19,770	615	347·90	45,240	730	351·90	90,266	1,833	355·90	163,586	
344·00	20,385	615	348·00	45,970	740	352·00	92,099	1,833			
344·10	21,000	615	348·10	46,710	750	352·10	93,932	1,833			
344·20	21,615	615	348·20	47,460	750	352·20	95,765	1,833			
344·30	22,230	615	348·30	48,210	750	352·30	97,598	1,833			
344·40	22,845	615	348·40	48,960	760	352·40	99,431	1,833			
344·50	23,460	615	348·50	49,720	760	352·50	101,264	1,833			
344·60	24,075	615	348·60	50,480	770	352·60	103,097	1,833			
344·70	24,690	615	348·70	51,250	780	352·70	104,930	1,833			
344·80	25,305	615	348·80	52,030	780	352·80	106,763	1,833			
344·90	25,920	615	348·90	52,810	790	352·90	108,596	1,833			
345·00	26,535	615	349·00	53,600	800	353·00	110,429	1,833			
345·10	27,150	615	349·10	54,400	850	353·10	112,262	1,833			
345·20	27,765	615	349·20	55,250	850	353·20	114,095	1,833			
345·30	28,380	615	349·30	56,100	900	353·30	115,928	1,833			
345·40	28,995	615	349·40	57,090	910	353·40	117,761	1,833			
345·50	29,610	615	349·50	58,000	1,000	353·50	119,594	1,833			
345·60	30,225	615	349·60	59,000	1,000	353·60	121,427	1,833			
345·70	30,840	615	349·70	60,000	1,000	353·70	123,260	1,833			
345·80	31,455	615	349·80	61,000	1,000	353·80	125,093	1,833			
345·90	32,070	615	349·90	62,000	1,000	353·90	126,926	1,833			

Discharge Rating table for Bonnechère River at Renfrew, Ont.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet.	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
322·00			324·00	650	60	326·00	2,560	150			
322·10			324·10	710	60	326·10	2,710	150			
322·20			324·20	770	60	326·20	2,860	170			
322·30			324·30	830	60	326·30	3,030	170			
322·40			324·40	890	60	326·40	3,200	190			
322·50			324·50	950	60	326·50	3,390	190			
322·60			324·60	1,010	70	326·60	3,580	200			
322·70			324·70	1,080	70	326·70	3,780	200			
322·80	90	30	324·80	1,150	90	326·80	3,980	210			
322·90	120	40	324·90	1,240	100	326·90	4,190	210			
323·00	160	40	325·00	1,340	100	327·00	4,400	210			
323·10	200	40	325·10	1,440	100	327·10	4,610	210			
323·20	240	40	325·20	1,540	100	327·20	4,820	220			
323·30	280	40	325·30	1,640	100	327·30	5,040	220			
323·40	320	40	325·40	1,740	120	327·40	5,260				
323·50	360	50	325·50	1,860	120	327·50					
323·60	410	60	325·60	1,980	140	327·60					
323·70	470	60	325·70	2,120	140	327·70					
323·80	530	60	325·80	2,260	150	327·80					
323·90	590	60	325·90	2,410	150						

Discharge Rating table for Madawaska River at Clay Bank Bridge, Ont.

Gauge height.	Dis. charge.	Difference.	Gauge height.	Dis-charge.	Difference.	Gauge height.	Dis-charge.	Difference.	Gauge height.	Dis-charge.	Difference.	Gauge height.	Dis-charge.	Difference.
Feet.	Sec.-ft.	Sec.-ft.	Feet.	Sec.-ft.	Sec.-ft.	Feet.	Sec.-ft.	Sec.-ft.	Feet.	Sec.-ft.	Sec.-ft.	Feet.	Sec.-ft.	Sec.-ft.
259·00	.....	.....	261·00	1,560	120	263·00	6,910	333	265·00	13,576	334	267·00	20,243	
259·10	.....	.....	261·10	1,680	120	263·10	7,243	333	265·10	13,910	333	267·10		
259·20	.....	.....	261·20	1,800	150	263·20	7,576	334	265·20	14,243	333	267·20		
259·30	.....	.....	261·30	1,950	150	263·30	7,910	333	265·30	14,576	334	267·30		
259·40	450	30	261·40	2,100	160	263·40	8,243	333	265·40	14,910	333	267·40		
259·50	480	40	261·50	2,260	160	263·50	8,576	334	265·50	15,243	333	267·50		
259·60	520	50	261·60	2,420	240	263·60	8,910	333	265·60	15,576	334	267·60		
259·70	570	60	261·70	2,660	250	263·70	9,243	333	265·70	15,910	333	267·70		
259·80	630	60	261·80	2,910	333	263·80	9,576	334	265·80	16,243	333	267·80		
259·90	690	60	261·90	3,243	333	263·90	9,910	333	265·90	16,576	334	267·90		
260·00	750	60	262·00	3,576	334	264·00	10,243	333	266·00	16,910	333	267·00		
260·10	810	60	262·10	3,910	333	264·10	10,576	334	266·10	17,243	333	237·10		
260·20	870	60	262·20	4,243	333	264·20	10,910	333	266·20	17,576	334	267·20		
260·30	930	70	262·30	4,576	334	264·30	11,243	333	266·30	17,910	333	267·30		
260·40	1,000	80	262·40	4,910	333	264·40	11,576	334	266·40	18,243	333	267·40		
260·50	1,080	80	262·50	5,243	333	264·50	11,910	333	266·50	18,576	334	267·50		
260·60	1,160	90	262·60	5,576	334	264·60	12,243	333	266·60	18,910	333	267·60		
260·70	1,250	90	262·70	5,910	333	264·70	12,576	334	266·70	19,243	333	267·70		
260·80	1,340	110	262·80	6,243	333	264·80	12,910	333	266·80	19,576	334	267·80		
260·90	1,450	110	262·90	6,576	334	264·90	13,243	333	266·90	19,910	333	267·90		

Discharge Rating table for Ottawa River at Britannia Bay, Ont.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
189·00	7,500	.....	191·00	27,700	1,100	193·00	52,500	1,400	195·00	85,500	2,000	197·00	132,200	3,000
189·10	8,500	1,000	191·10	28,800	1,100	913·10	53,900	1,400	195·10	87,500	2,000	197·10	135,200	3,300
189·20	9,500	1,000	191·20	29,900	1,100	193·20	55,400	1,500	195·20	89,500	2,000	197·20	138,500	3,300
189·30	10,500	1,000	191·30	31,000	1,100	193·30	56,900	1,500	195·30	91,500	2,000	197·30	141,800	3,300
189·40	11,500	1,000	191·40	32,100	1,100	193·40	58,400	1,500	195·40	93,500	2,000	197·40	145,100	3,300
189·50	12,500	1,000	191·50	33,200	1,100	193·50	60,000	1,600	195·50	95,500	2,000	197·50	148,400	3,300
189·60	13,500	1,000	191·60	34,300	1,100	193·60	61,600	1,600	195·60	97,500	2,000	197·60	151,700	3,500
189·70	14,500	1,000	191·70	35,500	1,200	193·70	63,200	1,600	195·70	99,500	2,200	197·70	155,200	3,800
189·80	15,500	1,000	191·80	36,700	1,200	193·80	64,800	1,600	195·80	101,700	2,300	197·80	159,000	3,800
189·90	16,500	1,000	191·90	37,900	1,200	193·90	66,400	1,600	195·90	104,000	2,300	197·90	162,800	4,000
190·00	17,500	1,000	192·00	39,100	1,200	194·00	68,000	1,600	196·00	106,300	2,300	198·00	166,800	4,000
190·10	18,500	1,000	192·10	40,300	1,200	194·10	69,600	1,600	196·10	108,600	2,300	198·10	170,800	4,000
190·20	19,500	1,000	192·20	41,500	1,200	194·20	71,200	1,600	196·20	110,900	2,500	198·20	174,800	4,000
190·30	20,500	1,000	192·30	42,800	1,300	194·30	72,800	1,600	196·30	113,400	2,600	198·30	178,800	4,000
190·40	21,500	1,000	192·40	44,100	1,300	194·40	74,600	1,800	196·40	116,000	2,600	198·40	182,800	
190·50	22,500	1,000	192·50	45,500	1,400	194·50	76,400	1,800	196·50	118,600	2,600	198·50		
190·60	23,500	1,000	192·60	46,900	1,400	194·60	78,200	1,800	196·60	121,200	2,600	198·60		
190·70	24,500	1,000	192·70	48,300	1,400	194·70	80,000	1,800	196·70	123,800	2,600	198·70		
190·80	25,500	1,000	192·80	49,700	1,400	194·80	81,800	1,800	196·80	126,400	2,900	198·80		
190·90	26,600	1,000	192·90	51,100	1,400	194·90	83,600	1,900	196·90	129,300	2,900	198·90		

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Discharge Rating table for Gatineau River at Chelsea, Que.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
203·00	.....	.....	207·00	12,700	350	211·00	33,700	650	215·00	66,000	1,050
203·10	.....	.....	207·10	13,050	350	211·10	34,350	650	215·10	67,050	1,050
203·20	.....	.....	207·20	13,400	400	211·20	35,000	650	215·20	68,100	1,050
203·30	.....	.....	207·30	13,800	400	211·30	35,650	650	215·30	69,150	1,050
203·40	.....	.....	207·40	14,200	400	211·40	36,300	650	215·40	70,200	1,070
203·50	2,500	200	207·50	14,600	400	211·50	36,950	650	215·50	71,270	1,070
203·60	2,700	200	207·60	15,000	450	211·60	37,600	650	215·60	72,340	1,070
203·70	2,900	200	207·70	15,450	450	211·70	38,250	650	215·70	73,410	1,070
203·80	3,100	200	207·80	15,900	450	211·80	38,900	700	215·80	74,480	1,070
203·90	3,300	200	207·90	16,350	450	211·90	39,600	700	215·90	75,550	1,070
204·00	3,500	250	208·00	16,800	500	212·00	40,300	700	216·00	76,620	1,070
204·10	3,750	250	208·10	17,300	500	212·10	41,000	700	216·10	77,690	1,070
204·20	4,000	250	208·20	17,800	500	212·20	41,700	700	216·20	78,760	1,070
204·30	4,250	250	208·30	18,300	500	212·30	42,400	700	216·30	79,830	1,070
204·40	4,500	250	208·40	18,800	500	212·40	43,100	700	216·40	80,900	1,070
204·50	4,750	250	208·50	19,300	500	212·50	43,800	700	216·50	81,970	1,070
204·60	5,000	250	208·60	19,800	500	212·60	44,500	700	216·60	83,040	1,070
204·70	5,250	250	208·70	20,300	500	212·70	45,200	750	216·70	84,110	1,070
204·80	5,500	250	208·80	20,800	500	212·80	45,950	750	216·80	85,180	1,070
204·90	5,750	300	208·90	21,300	500	212·90	46,700	750	216·90	86,250	1,070
205·00	6,050	300	209·00	21,800	500	213·00	47,450	750	217·00	87,320	1,070
205·10	6,350	300	209·10	22,300	500	213·10	48,200	800	217·10	88,390	1,070
205·20	6,650	300	209·20	22,800	500	213·20	49,000	800	217·20	89,460	1,070
205·30	6,950	300	209·30	23,300	500	213·30	49,800	800	217·30	90,530	1,070
205·40	7,250	300	209·40	23,800	550	213·40	50,600	850	217·40	91,600	1,070
205·50	7,550	300	209·50	24,350	550	213·50	51,450	850	217·50	92,670	1,070
205·60	7,850	300	209·60	24,900	550	213·60	52,300	850	217·60	93,740	1,070
205·70	8,150	350	209·70	25,450	550	213·70	53,150	850	217·70	94,810	1,070
205·80	8,500	350	209·80	26,000	600	213·80	54,000	900	217·80	95,880	1,070
205·90	8,850	350	209·90	26,600	600	213·90	54,900	900	217·90	96,950	1,070
206·00	9,200	350	210·00	27,200	650	214·00	55,800	950	218·00	98,020	1,070
206·10	9,550	350	210·10	27,850	650	214·10	56,750	950	218·10	99,090	1,070
206·20	9,900	350	210·20	28,500	650	214·20	57,700	1,000	218·20	100,160	
206·30	10,250	350	210·30	29,150	650	214·30	58,700	1,000	218·30		
206·40	10,600	350	210·40	29,800	650	214·40	59,700	1,050			
206·50	10,950	350	210·50	30,450	650	214·50	60,750	1,050			
206·60	11,300	350	210·60	31,100	650	214·60	61,800	1,050			
206·70	11,650	350	210·70	31,750	650	214·70	62,850	1,050			
206·80	12,000	350	210·80	32,400	650	214·80	63,900	1,050			
206·90	12,350	350	210·90	33,050	650	214·90	64,950	1,050			

Discharge Rating table for Ottawa River at Besserer's Grove, Ont.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
126·00			130·00	27,950	650	134·00	57,600	850	138·00	95,000	1,050	142·00	139,560	1,130
126·10			130·10	28,600	650	134·10	58,450	850	138·10	96,050	1,050	142·10	140,690	1,130
126·20			130·20	29,250	650	134·20	59,300	850	138·20	97,100	1,050	142·20	141,820	1,130
126·30			130·30	29,900	650	134·30	60,150	850	138·30	98,150	1,050	142·30	142,950	1,120
126·40			130·40	30,550	650	134·40	61,000	800	138·40	99,200	1,100	142·40	144,070	1,130
126·50			130·50	31,200	700	134·50	61,800	850	138·50	100,300	1,100	142·50	145,200	1,130
126·60			130·60	31,900	700	134·60	62,650	850	138·60	101,400	1,100	142·60	146,330	1,130
126·70			130·70	32,600	700	134·70	63,500	850	138·70	102,500	1,100	142·70	147,460	1,130
126·80			130·80	33,300	700	134·80	64,350	850	138·80	103,600	1,100	142·80	148,590	1,120
126·90	10,250	450	130·90	34,000	700	134·90	65,200	850	138·90	104,700	1,100	142·90	149,710	1,130
127·00	10,700	450	131·00	34,700	700	135·00	66,050	850	139·00	105,800	1,100	143·00	150,840	1,130
127·10	11,150	450	131·10	35,400	700	135·10	66,900	850	139·10	106,900	1,100	143·10	151,970	1,130
127·20	11,600	450	131·20	36,100	700	135·20	67,750	850	139·20	108,000	1,100	143·20	153,100	1,130
127·30	12,050	500	131·30	36,800	750	135·30	68,600	850	139·30	109,100	1,120	143·30	154,230	1,120
127·40	12,550	500	131·40	37,550	750	135·40	69,450	850	139·40	110,220	1,130	143·40	155,360	1,130
127·50	13,050	500	131·50	38,300	750	135·50	70,300	900	139·50	111,350	1,130	143·50	156,490	1,130
127·60	13,550	500	131·60	39,050	750	135·60	71,200	900	139·60	112,480	1,130	143·60	157,620	1,130
127·70	14,050	500	131·70	39,800	750	135·70	72,100	900	139·70	113,610	1,130	143·70	158,750	1,130
127·80	14,550	500	131·80	40,550	750	135·80	73,000	900	139·80	114,740	1,130	143·80	159,870	1,120
127·90	15,050	500	131·90	41,300	750	135·90	73,900	900	139·90	115,870	1,130	143·90	161,000	1,130
128·00	15,550	550	132·00	42,050	750	136·00	74,800	950	140·00	117,000	1,130	144·00	162,130	1,130
128·10	16,100	550	132·10	42,800	750	136·10	75,750	950	140·10	118,130	1,130	144·10	163,260	1,130
128·20	16,650	600	132·20	43,550	750	136·20	76,700	950	140·20	119,260	1,130	144·20	164,390	1,130
128·30	17,250	600	132·30	44,300	750	136·30	77,650	950	140·30	120,380	1,120	144·30	165,510	1,120
128·40	17,850	600	132·40	45,050	750	136·40	78,600	1,000	140·40	121,510	1,130	144·40	166,640	1,130
128·50	18,450	600	132·50	45,800	750	136·50	79,600	1,000	140·50	122,640	1,130	144·50	167,770	1,130
128·60	19,050	600	132·60	46,550	750	136·60	80,600	1,000	140·60	123,770	1,130	144·60	168,900	1,130
128·70	19,650	600	132·70	47,300	750	136·70	81,600	1,000	140·70	124,900	1,130	144·70	170,030	1,130
128·80	20,250	600	132·80	48,050	750	136·80	82,600	1,000	140·80	126,030	1,120	144·80	171,160	1,120
128·90	20,850	600	132·90	48,800	800	136·90	83,600	1,000	140·90	127,150	1,130	144·90	172,280	1,130
129·00	21,450	650	133·00	49,600	800	137·00	84,600	1,000	141·00	128,280	1,130	145·00	173,410	1,130
129·10	22,100	650	133·10	50,400	800	137·10	85,600	1,050	141·10	129,410	1,130	145·10	174,540	1,130
129·20	22,750	650	133·20	51,200	800	137·20	86,650	1,000	141·20	130,540	1,130	145·20	175,670	1,130
129·30	23,400	650	133·30	52,000	800	137·30	87,650	1,050	141·30	131,670	1,120	145·30	176,800	1,120
129·40	24,050	650	133·40	52,800	800	137·40	88,700	1,050	141·40	132,790	1,130	145·40	177,920	1,130
129·50	24,700	650	133·50	53,600	800	137·50	89,750	1,050	141·50	133,920	1,130	145·50	179,050	1,130
129·60	25,350	650	133·60	54,400	800	137·60	90,800	1,050	141·60	135,050	1,130	145·60	180,180	1,130
129·70	26,000	650	133·70	55,200	800	137·70	91,850	1,050	141·70	136,180	1,130	145·70	181,310	1,130
129·80	26,650	650	133·80	56,000	800	137·80	92,900	1,050	141·80	137,310	1,120	145·80	182,440	1,120
129·90	27,300	650	133·90	56,800	800	137·90	93,950	1,050	141·90	138,430	1,130	145·90	183,560	1,130

146·00	184,690	1,130	148·00	207,250	1,130	150·00	229,810	1,130	152·00	252,470	
146·10	185,820	1,130	148·10	208,380	1,130	150·10	230,940	1,130			
146·20	186,950	1,130	148·20	209,510	1,130	150·20	232,070	1,130			
146·30	188,080	1,120	148·30	210,640	1,120	150·30	233,200	1,120			
146·40	189,200	1,130	148·40	211,760	1,130	150·40	234,320	1,130			
146·50	190,330	1,130	148·50	212,890	1,130	150·50	235,450	1,130			
146·60	191,460	1,130	148·60	214,020	1,130	150·60	236,580	1,130			
146·70	192,590	1,130	148·70	215,150	1,130	150·70	237,710	1,130			
146·80	193,720	1,120	148·80	216,280	1,120	150·80	238,840	1,120			
146·90	194,840	1,130	148·90	217,400	1,130	150·90	239,960	1,130			
147·00	195,970	1,130	149·00	218,530	1,130	151·00	241,090	1,130			
147·10	197,100	1,130	149·10	219,660	1,130	151·10	242,320	1,130			
147·20	198,230	1,130	149·20	220,790	1,130	151·20	243,450	1,130			
147·30	199,360	1,120	149·30	221,920	1,120	151·30	244,580	1,120			
147·40	200,480	1,130	149·40	223,040	1,130	151·40	245,700	1,130			
147·50	201,610	1,130	149·50	224,170	1,130	151·50	246,830	1,130			
147·60	202,740	1,130	149·60	225,300	1,130	151·60	247,960	1,130			
147·70	203,870	1,130	149·70	226,430	1,130	151·70	249,090	1,130			
147·80	205,000	1,120	149·80	227,560	1,120	151·80	250,220	1,120			
147·90	206,120	1,130	149·90	228,680	1,130	151·90	251,340	1,130			

Winter Discharge Rating table for Ottawa River at Besserer's Grove, Ont.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height.	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
128·00	.....	.....	130·00	19,150	550	132·00	30,350	500			
128·10	.....	.....	130·10	19,700	550	132·10	30,850	500			
128·20	.....	.....	130·20	20,250	550	132·20	31,350	550			
128·30	.....	.....	130·30	20,800	550	132·30	31,900	550			
128.40	.....	.....	130·40	21,350	550	132·40	32,450	550			
128·50	.....	.....	130·50	21,900	550	132·50	33,000	550			
128·60	.....	.....	130·60	22,450	550	132·60	33,550	550			
128·70	.....	.....	130·70	23,000	550	132·70	34,100	550			
128·80	11,800	650	130·80	23,550	550	132·80	34,650	550			
128·90	12,450	650	130·90	24,100	550	132·90	35,200	550			
129·00	13,100	600	131·00	24,650	550	133·00	35,750	500			
129·10	13,700	600	131·10	25,200	600	133·10	36,250	500			
129·20	14,300	600	131·20	25,800	600	133·20	36,750				
129·30	14,900	600	131·30	26,400	600						
129·40	15,500	600	131·40	27,000	600						
129·50	16,100	600	131·50	27,600	600						
129·60	16,700	600	131·60	28,200	550						
129·70	17,300	550	131·70	28,750	550						
129·80	17,850	550	131·80	29,300	550						
129·90	18,600	550	131·90	29,850	500						

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Discharge Rating table for Du Lièvre River below Poupore Lock, Que.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
424·00	.....	.....	428·00	4,750	130	432·00	12,110	240	436·00	21,720	245
424·10	.....	.....	428·10	4,880	130	432·10	12,350	240	436·10	21,965	245
424·20	.....	.....	428·20	5,010	130	432·20	12,590	240	436·20	22,210	245
424·30	.....	.....	428·30	5,140	130	432·30	12,830	240	436·30	22,455	245
424·40	1,870	30	428·40	5,270	130	432·40	13,070	230	436·40	22,700	245
424·50	1,900	30	428·50	5,400	130	432·50	13,300	230	436·50	22,945	245
424·60	1,930	30	428·60	5,530	130	432·60	13,550	230	436·60	23,290	245
424·70	1,960	40	428·70	5,660	130	432·70	13,780	230	436·70	23,535	245
424·80	2,000	40	428·80	5,790	140	432·80	14,010	230	436·80	23,780	245
424·90	2,040	40	428·90	5,930	140	432·90	14,240	230	436·90	24,025	245
425·00	2,080	50	429·00	6,070	160	433·00	14,470	230	437·00	24,270	245
425·10	2,130	50	420·10	6,230	160	433·10	14,700	230	437·10	24,515	245
425·20	2,180	60	429·20	6,390	160	433·20	14,930	230	437·20	24,760	245
425·30	2,240	60	429·30	6,550	160	433·30	15,160	230	437·30	25,005	245
425·40	2,300	60	429·40	6,710	180	433·40	15,390	240	437·40	25,250	245
425·50	2,360	60	429·50	6,890	180	433·50	15,630	240	437·50	25,495	245
425·60	2,420	60	429·60	7,070	190	433·60	15,870	240	437·60	25,740	245
425·70	2,480	60	429·70	7,260	190	433·70	16,110	240	437,70	25,985	245
425·80	2,540	60	429·80	7,450	190	433·80	16,350	240	437·80	26,130	245
425·90	2,600	60	429·90	7,640	190	433·90	16,590	240	437·90	26,375	
426·00	2,660	60	430·00	7,830	190	434·00	16,830	240			
426·10	2,720	60	430·10	8,020	190	434·10	17,070	240			
426·20	2,780	60	430·20	8,210	190	434·20	17,310	245			
426·30	2,840	60	430·30	8,400	190	434·30	17,555	245			
426·40	2,900	70	430·40	8,590	200	434·40	17,800	245			
426·50	2,970	70	430·50	8,790	200	434·50	18,045	245			
426·60	3,040	100	430·60	8,990	210	434·60	18,290	245			
426·70	3,140	100	430·70	9,200	210	434·70	18,535	245			
426·80	3,240	100	430·80	9,410	220	434·80	18,780	245			
426·90	3,340	100	430·90	9,630	220	434·90	19,025	245			
427·00	3,440	120	431·00	9,850	220	435·00	19,270	245			
427·10	3,560	120	431·10	10,070	220	435·10	19,515	245			
427·20	3,680	120	431·20	10,290	220	435·20	19,760	245			
427·30	3,800	120	431·30	10,510	220	435·30	20,005	245			
427·40	3,920	140	431·40	10,730	230	435·40	20,250	245			
427·50	4,060	140	431·50	10,960	230	435·50	20,495	245			
427·60	4,200	140	431·60	11,190	230	435·60	20,740	245			
427·70	4,340	140	431·70	11,420	230	435·70	20,985	245			
427·80	4,480	140	431·80	11,650	230	435·80	21,230	245			
427·90	4,620	130	431·90	11,880	230	435·90	21,475	245			

Winter Discharge Rating table for Du Lièvre River below Poupore Lock.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
424·00	600	60	425·00	1,380	90	426·00	2,290	100	427·00	3,410	130
424·10	660	60	425·10	1,470	90	426·10	2,390	100	427·10	3,540	
424·20	720	80	425·20	1,560	90	426·20	2,490	100			
424·30	800	80	425·30	1,650	90	426·30	2,590	100			
424·40	880	80	425·40	1,740	90	426·40	2,690	110			
424·50	960	80	425·50	1,830	90	426·50	2,800	110			
424·60	1,040	80	425·60	1,920	90	426·60	2,910	120			
424·70	1,120	80	425·70	2,010	90	426·70	3,030	120			
424·80	1,200	90	425·80	2,100	90	426·80	3,150	130			
424·90	1,290	90	425·90	2,190	100	426·90	3,280	130			

Discharge Rating table for Nation River at Plantagenet Springs, Ont.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
145·00	.....	.....	149·00	3,000	150	153·00	11,270	270	157·00	22,214	274	161·00	33,184	274
145·10	.....	.....	149·10	3,150	150	153·10	11,540	270	157·10	22,498	274	161·10	33,458	274
145·20	.....	.....	149·20	3,300	150	153·20	11,810	270	157·20	22,772	274	161·20	33,732	274
145·30	.....	.....	149·30	3,450	150	153·30	12,080	270	157·30	23,046	274	161·30	34,006	274
145·40	0·00	.....	149·40	3,600	160	153·40	12,350	274	157·40	23,320	274	161·40	34,280	274
145·50	20	20	149·50	3,760	170	153·50	12,624	274	157·50	23,594	274	161·50	34,554	274
145·60	40	20	149·60	3,930	180	153·60	12,898	274	157·60	23,868	274	161·60	34,828	274
145·70	60	20	149·70	4,110	180	153·70	13,172	274	157·70	24,142	274	161·70	35,102	274
145·80	80	20	149·80	4,290	180	153·80	13,446	274	157·80	24,416	274	161·80	35,376	274
145·90	100	30	149·90	4,470	180	153·90	13,720	274	157·90	24,690	274	161·90	35,650	274
146·00	130	40	150·00	4,650	180	154·00	13,994	274	158·00	24,964	274	162·00	35,924	274
146·10	170	40	150·10	4,830	180	154·10	14,268	274	158·10	25,238	274	162·10	36,198	274
146·20	210	40	150·20	5,010	190	154·20	14,542	274	158·20	25,512	274	162·20	36,472	274
146·30	250	50	150·30	5,200	190	154·30	14,816	274	158·30	25,786	274	162·30	36,746	274
146·40	300	50	150·40	5,390	200	154·40	15,090	274	158·40	26,060	274	162·40	37,020	274
146·50	350	60	150·50	5,590	200	154·50	15,364	274	158·50	26,334	274	162·50	37,294	274
146·60	410	60	150·60	5,790	210	154·60	15,638	274	158·60	26,608	274	162·60	37,568	274
146·70	470	60	150·70	6,000	210	154·70	15,912	274	158·70	26,882	274	162·70	37,842	274
146·80	530	60	150·80	6,210	210	154·80	16,186	274	158·80	27,156	274	162·80	38,116	274
146·90	590	70	150·90	6,420	210	154·90	16,460	274	158·90	27,430	274	162·90	38,390	274
147·00	660	70	151·00	6,630	210	155·00	16,734	274	159·00	27,704	274	163·00	38,664	274
147·10	730	80	151·10	6,840	210	155·10	17,008	274	159·10	27,978	274	163·10	38,938	274
147·20	810	90	151·20	7,050	220	155·20	17,282	274	159·20	28,252	274	163·30	39,212	274
147·30	900	90	151·30	7,270	220	155·30	17,556	274	159·30	28,526	274	163·30	39,486	274
147·40	990	100	151·40	7,490	220	155·40	17,830	274	159·40	28,800	274	163·40	39,760	
147·50	1,090	100	151·50	7,710	220	155·50	18,104	274	159·50	29,074	274			
147·60	1,190	110	151·60	7,930	220	155·60	18,378	274	159·60	29,348	274			
147·70	1,300	110	151·70	8,150	220	155·70	18,652	274	159·70	29,622	274			
147·80	1,410	120	151·80	8,370	220	155·80	18,926	274	159·80	29,896	274			
147·90	1,530	120	151·90	8,590	220	155·90	19,200	274	159·90	30,170	274			
148·00	1,650	120	152·00	8,810	230	156·00	19,474	274	160·00	30,444	274			
148·10	1,770	130	152·10	9,040	230	156·10	19,748	274	160·10	30,718	274			
148·20	1,900	130	152·20	9,270	240	156·20	20,022	274	160·20	30,992	274			
148·30	2,030	130	152·30	9,510	250	156·30	20,296	274	160·30	31,266	274			
148·40	2,160	130	152·40	9,760	250	156·40	20,570	274	610·40	31,540	274			
148·50	2,290	130	152·50	10,010	250	156·50	20,844	274	160·50	31,814	274			
148·60	2,420	140	152·60	10,260	250	156·60	21,118	274	160·60	32,088	274			
148·70	2,560	140	152·70	10,510	250	156·70	21,392	274	160·70	32,362	274			
148·80	2,700	150	152·80	10,760	250	156·00	21,666	274	160·80	32,636	274			
148·90	2,850	150	152·90	11,010	260	156·90	21,940	274	160·90	32,910	274			

Discharge Rating table for Rouge River at Table Falls, Que.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
358·00	.....	.....	360·00	1,710	130	362·00	8,060	640	364·00	21,950	700	366·00	35,950	700			
358·10	.....	.....	360·10	1,840	150	362·10	8,700	680	364·10	22,650	700	366·10	36,650	700			
358·20	.....	.....	360·20	1,990	170	362·20	9,380	680	364·20	23,350	700	366·20	37,350	700			
358·30	.....	.....	360·30	2,160	190	362·30	10,060	690	364·30	24,050	700	366·30	38,050	700			
358·40	.....	.....	360·40	2,350	200	362·40	10,750	700	364·40	24,750	700	366·40	38,750	700			
358·50	.....	.....	360·50	2,550	220	362·50	11,450	700	364·50	25,450	700	366·50	39,450	700			
358·60	860	10	360·60	2,770	230	362·60	12,150	700	364·60	26,150	700	366·60	40,150	700			
358·70	870	10	360·70	3,000	250	362·70	12,850	700	364·70	26,850	700	366·70	40,850	700			
358·80	880	20	360·80	3,250	260	362·80	13,550	700	364·80	27,550	700	366·80	41,550	700			
358·90	900	20	360·90	3,510	280	362·90	14,250	700	364·90	28,250	700	366·90	42,250	700			
359·00	920	40	361·00	3,790	310	363·00	14,950	700	365·00	28,950	700	367·00	42,950				
359·10	960	40	361·10	4,100	320	363·10	15,650	700	365·10	29,650	700	367·10					
359·20	1,000	60	361·20	4,420	350	363·20	16,350	700	365·20	30,350	700	367·20					
359·30	1,060	60	361·30	4,770	350	363·30	17,050	700	365·30	31,050	700	367·30					
359·40	1,120	80	361·40	5,120	380	363·40	17,750	700	365·40	31,750	700	367·40					
359·50	1,200	80	361·50	5,500	430	363·50	18,450	700	365·50	32,450	700	367·50					
359·60	1,280	90	361·60	5,930	470	363·60	19,150	700	365·60	33,150	700	367·60					
359·70	1,370	100	361·70	6,400	520	363·70	19,850	700	365·70	33,850	700	367·70					
359·80	1,470	120	361·80	6,920	540	363·80	20,550	700	365·80	34,550	700	367·80					
359·90	1,590	120	361·90	7,460	600	363·90	21,250	700	365·90	35,250	700	367·90					

Discharge Rating table for Ottawa River at Upper Carillon, Que.

Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference	Gauge height	Discharge	Difference
Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.	Feet	Sec.-ft.	Sec.-ft.
82·00	12,200	50	86·00	46,000	1,800	90·00	125,500	2,300	94·00	233,600	3,300
82·10	12,250	50	86·10	47,800	1,800	90·10	127,800	2,300	94·10	236,900	3,300
82·10	12,300	100	86·20	49,600	1,800	90·20	130,100	2,300	94·20	240,200	3,400
82·30	12,400	100	86·30	51,400	1,800	90·30	132,400	2,300	94·30	243,600	3,400
82·40	12,500	100	86·40	53,200	1,800	90·40	134,700	2,300	94·40	247,000	3,400
82·50	12,600	100	86·50	55,000	1,800	90·50	137,000	2,300	94·50	250,400	3,400
82·60	12,700	200	86·60	56,800	1,900	90·60	139,300	2,400	94·60	253,800	3,400
82·70	12,900	300	86·70	58,700	1,900	90·70	141,700	2,400	94·70	257,200	3,400
82·80	13,100	300	86·80	60,600	1,900	90·80	144,100	2,400	94·80	260,600	3,400
82·90	13,400	300	86·90	62,500	2,000	90·90	146,500	2,400	94·90	264,000	3,400
83·00	13,700	300	87·00	64,500	2,000	91·00	148,900	2,400	95·00	267,400	
83·10	14,000	400	87·10	66,500	2,000	91·10	151,300	2,400			
83·20	14,400	400	87·20	68,500	2,000	91·20	153,700	2,400			
83·30	14,800	400	87·30	70,500	2,000	91·30	156,100	2,400			
83·40	15,200	400	87·40	72,500	2,000	91·40	158,500	2,400			
83·50	15,600	400	87·50	74,500	2,000	91·50	160,900	2,400			
83·60	16,000	400	87·60	76,500	2,000	91·60	163,300	2,500			
83·70	16,400	400	87·70	78,500	2,000	91·70	165,800	2,600			
83·80	16,800	500	87·80	80,500	2,000	91·80	168,400	2,700			
83·90	17,300	500	87·90	82,500	2,000	91·90	171,100	2,700			
84·00	17,800	700	88·00	84,500	2,000	92·00	173,800	2,800			
84·10	18,500	900	88·10	86,500	2,000	92·10	176,600	2,800			
84·20	19,400	1,000	88·20	88,500	2,000	92·20	179,400	2,800			
84·30	20,400	1,200	88·30	90,500	2,000	92·30	182,200	2,800			
84·40	21,600	1,200	88·40	92,500	2,000	92·40	185,000	2,800			
84·50	22,800	1,200	88·50	94,500	2,000	92·50	187,800	2,800			
84·60	24,000	1,200	88·60	96,500	2,000	92·60	190,600	2,800			
84·70	25,200	1,200	88·70	98,500	2,000	92·70	193,400	2,800			
84·80	26,400	1,300	88·80	100,500	2,000	92·80	196,200	3,000			
84·90	27,700	1,300	88·90	102,500	2,000	92·90	199,200	3,000			
85·00	29,000	1,500	89·00	104,500	2,000	93·00	202,200	3,000			
85·10	30,500	1,500	89·10	106,500	2,000	93·10	205,200	3,000			
85·20	32,000	1,700	89·20	108,500	2,100	93·20	208,200	3,000			
85·30	33,700	1,800	89·30	110,600	2,100	92·30	211,200	3,000			
85·40	35,500	1,700	89·40	112,700	2,100	93·40	214,200	3,200			
85·50	37,200	1,800	89·50	114,800	2,100	93·50	217,400	3,200			
85·60	39,000	1,700	89·60	116,900	2,100	92·60	220,600	3,200			
85·70	40,700	1,700	89·70	119,000	2,100	93·70	223,800	3,200			
85·80	42,400	1,800	89·80	121,100	2,200	93·80	227,000	3,300			
85·90	44,200	1,800	89·90	123,300	2,200	93·90	230,300	3,300			

PUBLIC WORKS CANADA

Notes on a Visit

to the

PANAMA CANAL

December, 1911 and January, 1912

April 1, 1912.

Hon. F. D. Monk,
Minister of Public Works.

Sir,—In compliance with your instructions, we have visited the works of the inter-oceanic canal now being built by the United States Government across the Isthmus of Panama, with a view to studying the organization, engineering features and methods of works of this great undertaking, and have the honour to submit the following notes in this regard.

The primary idea is to review the work with reference to its bearing on the proposed Ottawa River navigation.

Before giving details of the matters which have come under our observation it is our pleasant duty to acknowledge with gratitude your kindness in selecting us for this study, and to thank most sincerely the United States Government officers whom it has been our privilege to meet on the works for the very courteous treatment accorded to us, and the unfailing willingness shown in giving information.

Our notes on the result of our observations over the canal works follow in general detail.

We have the honour to be, sir,
Your obedient servants,

C. R. Coutlée,
S. J. Chapleau,
A. St. Laurent.

The canal zone was purchased by the United States in 1904, fifteen days after Panama declared its independence from the Columbian Government. Since then, events have taught the lesson that the work must be done directly by the Government, and that the administration must be a paternal system under the absolute control of one resident head.

Money was supplied by Congress in a haphazard manner, owing to unwise criticism. The appropriations voted are as follow:—

1902	$10,000,000 00
1905	11,000,000 00
Deficiency	6,000,000 00
1906	25,000,000 00
1907	27,000,000 00
Deficiency	12,000,000 00
1908	29,000,000 00
Deficiency	5,000,000 00
1909	34,000,000 00
1910	38,000,000 00
1911	46,000,000 00

In addition to this, $40,000,000 was paid the French Government for work done, Panama Railway, plant, buildings, etc., and $10,000,000 was paid to Panama for the 448 square miles of zone territory.

The work will likely cost $375,000,000, although the original estimate was about $200,000,000.

The lesson this teaches is that ample funds must be ready to buy large areas along the whole length of the Ottawa navigation. Flooded lands, spoiled grounds and other areas should be expropriated on a liberal scale throughout the entire length before any structural work is begun. A land and legal department is the first necessity to make expropriations and fix the prices to be paid.

Following the purchase of the area of the zone, the United States began construction operations. It was soon found, however, that the tropical conditions necessitated a large expenditure for sanitation. Work was therefore slackened and a sanitary scheme was set in operation; also a civil administration scheme and waterworks, sewers, roads and buildings.

After five years' experience these measures have proved a great success and aid to the general work, ; the expenditures to date have been as follows:—

Sanitation	$13,000,000
Civil administration	5,000,000
Water works and sewers	4,000,000
Roadways	2,000,000
Buildings and mosquito screens	10,000,000

This indicates, in connection with the Ottawa, that whether the work be done directly or by contract, the canal zone should be policed, both for law and order and to prevent pollution of the river banks, bed and water. Buildings for administration purposes should be constructed and maintained by the Department, so that employees will be cheaply and comfortably housed. This

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Central Division
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Pacific Division
Division Engineer
S. B. WILLIAMSON

Assistant Engineer
C. M. SAVILLE

ORGANIZATION CHART
OF
ISTHMIAN CANAL COMMISSION
July 1, 1911

PANAMA CANAL — PLAN AND PROFILE — PONTS ET CHAUSSÉES 1912

PACIFIC OCEAN

BALBOA

MIRAFLORES

PEDRO MIGUEL

PANAMA

Perico I.

Flamenco I.

Breakwater

BALBOA

500 Feet Wide

PEDRO MIGUEL 1 Lock

MIRAFLORES 2 Locks

Obispo Division

Culebra Cut 300 ft Wide

BOUNDARY ZONE

Chagres River

Gaillard Cut 300 ft Wide

RAILWAY

CANAL

GATUN RESERVOIR

1000 Feet Wide

Spillway

GATUN 3 Locks

500 Feet Wide

River Chagres

COLON

Toro Pt.

ATLANTIC OCEAN

Cross-Section Culebra Cut at Culebra
Showing greatest effect of Slides. — Eng. News.

Gatun Reservoir working level Elevation 85.

GATUN DAM
Top Elev. 115.

ATLANTIC OCEAN

COLON

Tide 20 Inches
Ordinary Water El. 0

Elevation -41.

Elevation -45.

50 Miles

H.W.S.T. El. 10
L.W.S.T. El. 0

Elevation 40

El. 55
El. 18

Oct 1913

Bottom Elev. 40

1690'

0 5 10 15 20 25 30 35 40 45

also prevents employees being under compliment to contractors or residents in the vicinity of the work. Roadways specially constructed and leading directly from the railways to canal works are very desirable. If constructed beforehand, they reduce the prices bid by contractors, and during and after the work they are of great service to employees and residents.

The buildings belonging to contractors for housing and feeding their men should be subject to close inspection by the sanitary department. The type of building should be dictated by the Department and the sanitary police should be empowered to order changes and betterments from time to time. The food, sleeping, lighting and fire protection of the camps should also be supervised.

Arrangements similar to these suggested above were enforced along the route of the Chicago drainage, where a large number of contractors' men were concentrated.

While the United States was purchasing the zone and making it fit to live in, several schemes for the location and type of a canal were being considered. Finally it was decided to dredge in seven miles from Colon—the Atlantic side—then lift by three locks to an interior basin extending twenty-two miles across the Isthmus to Gamboa. (See plan and profile, page 203.) This artificial basin is formed by a dam 1½ miles long closing a gap in the Atlantic coast hills at Gatun. The three locks in flight lifting from Atlantic level 85 ft to the surface of Gatun lake, are located at the east end of the dam upon a rock foundation. This rock outcrop is just sufficient for the three locks, each 1,000 feet long, and there is, fortunately, another outcrop about the middle of the dam, upon which the spillway is founded.

From Gamboa to Pedro Miguel, the divide between Atlantic and Pacific is pierced by the Culebra Cutting, 9 miles long. This is the only piece of regular canal work, and through it the level of Gatun lake will be extended to the Pedro Miguel lock, with a depth of 45 feet of water, the maximum cutting being 300 feet.

Pedro Miguel lock descends 30 feet toward the Pacific and 1½ miles below it is the Miraflores flight of two locks, making the remainder of the descent. Between Pedro Miguel and Miraflores is a small lake, 2 square miles area, into which several rivers of the Pacific watershed discharge.

Below Miraflores locks there is a dredged channel 3 miles to the coast, and 5 miles further into the Pacific, with a width of 500 feet and depth of 45 feet below mean tide. The tide range of the Pacific is 21 feet, against only 2 feet on the Atlantic side.

The type and location of the Panama canal agree in general principles with the designs for the Ottawa route. The Gatun lake is a large area, through which ships have ample room, but which is dependent upon a large dam and also the capacity of the Chagres river to keep it full.

Many disputes have arisen upon these two points, but there seems little doubt at the present time that both the dam and the water supply are safe and sure. The excess water during floods can also be passed by the spillway, so that overtopping of the dam is provided against.

The Ottawa route is fortunate in having better foundations for the dams than the mud bottoms at Panama, but the fissures in our granites must be expected to give trouble. Plenty of rock is available for rock-fill dams along the Ottawa, and plastic materials like clay are generally available to fill the voids in the loose rock.

Having discussed the general plan, the construction details will now be taken up, comparisons being made with the Ottawa project.

Excavation is the chief matter on the Panama work. The total bulk to be excavated is over 189,000,000 c. yds., of this 140,000,000 c. yds. has been taken

out. The Ottawa route will necessitate about 50,000,000 c. yds. of earth and rock excavation.

Taking the excavation from the Atlantic towards the Pacific, the first section is the channel through Limon (mud) Bay to the foot of the Gatun locks. This channel is 7 miles long, 4 miles being through soft mud under salt water to the shore line. There is then about 1½ miles through land above water to the Mindi hills, which rise 50 to 60 feet above the sea. Dredges were used up to these hills, but as the bulk of the hills were rock, steam shovels made the excavation there in the dry. The rock was seamy, but little water seeped through and one shovel cut was taken to grade, December, 1909. Unfortunately high water then flooded the pit and the soft material had then to be removed by suction dredge. It has again been unwatered however, and the rock is now being excavated by steam shovel again.

Slips of material immediately below Gatun locks led to filling the partially dug canal up to sea level and excavating a great basin by suction dredges. To keep this basin water from entering by the foot of the uncompleted lock flight, a temporary dam 78 feet high was constructed. Ten very narrow reinforced concrete piers were built resembling a series of vertical girders. The seaward side sloped well outwards and was covered with groove and tongue plank laid on stringers and caulked.



No. 85.—Temporary dam across foot Gatun locks to allow suction dredges to remove slides outside.

Generally the soft materials, overlying rock or stiff clay, are removed by suction dredges, after which the rock is drilled and blasted and removed by ladder and dipper dredges. The dredges operating in the Caribbean were two 5 c. yd. dipper dredges and three French ladder dredges. They removed 4½ million c. yds. of earth and a half a million c. yds. of rock at a cost of 22c. per c. yd. including plant and overhead charges up to 30th June, 1911.

The silt deposited in the channel during the same year was 2¾ million c. yds. due to severe storms from the north. To prevent this a breakwater is being built from Toro point over 2 miles long. A double track trestle on piles

is first constructed from which dirt trains from Culebra cut, 30 miles distant, deposit earth and rock into the sea. Rock dredged from the canal near Mindi is also deposited along the line of the breakwater and eventually hard rock will be brought from a considerable distance to finish the sea slope.

At Christobel, the American part of Colon city, docks are better built out into the sea. The bottom is mud overlying coral rock, which does not allow of ordinary pile driving. Steel cylinders therefore, 6 ft. diameter, ½ inch plate, are driven down by a steam ram to refusal. The interior is then pumped out and excavated by orange peel grabs, or by hand work and the driving by ram resumed. Some of these cylinders have penetrated over 60 ft., the last half of the excavation coming out practically dry. When a satisfactory bottom is reached they are filled with concrete and the tops connected by concrete floor.

The lesson for us in this approach work appears to be that all three sorts of dredges, suction, ladder and dipper, are required to do work economically. For instance, below Montreal on the back river route we have in the first eight miles soft clay, boulder materials and rock, so that it is a question if any contracting firm could economically supply the different types of plant. Oka lake also presents this problem as well as Lake St. Louis on the line passing in front of Montreal.

The type of dock foundation at Christobel would apply at several points along the Ottawa for bridge, dock and wall foundations.

The central division of the Panama Canal will, for our purposes, be taken to include the Gatun dam and locks, and the Culebra cut.

The Gatun dam really blocks the two outlets of the Chagres (Tiger) river through its tidal flats. Geologists suppose that the original surface has sunk 300 ft., but this depression has been filled to sea level with silt carried down by the torrential tropical rains—180 inches per year that fall upon the 1,320 square miles of Chagres drainage area.

Upon this silt bed over 200 ft. deep, the Gatun dam is being built with a base wide enough to distribute its weight over the soft flats. It is 2,100 ft. at the base, 398 ft. wide at water surface, elev. 85, and 100 ft. wide on top elev. 115. These excessive dimensions are no doubt the result of adverse criticism which indeed has tended to greatly increase the cost of the work throughout.

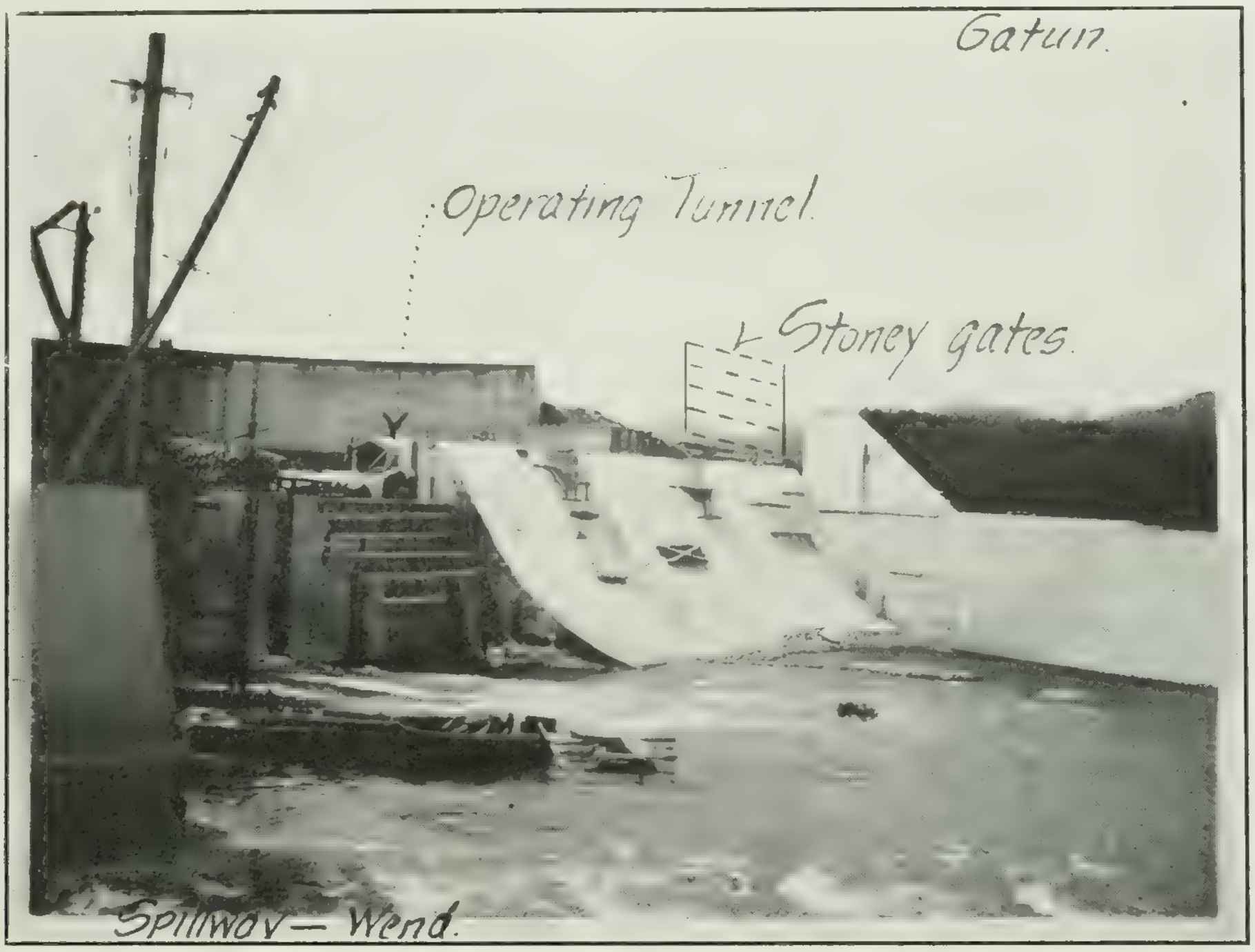
The two channels are separated by a hill rising to elev. 210, which was fortunately rock and served for a site to found the spillway upon. The dam is a broken line conforming to the topography of the site. It extends from the rock hill upon which the Gatun locks are built to the spillway hill and thence to the hill on the west side of the valley. The ground was examined by borings to determine the ability of the underlying strata to support the weight of the dam, also whether it would allow water to seep through under the head that will be imposed upon it. The foundation for the locks and spillway was also carefully examined showing that it possessed ample strength to support large structures. It was also found that the material beneath the dam was impervious to water and that the fine sands and silts mixed with clay beds in the vicinity were suitable to form an interior core wall.

The original design was a 3 to 1 slope on the upstream side and 1 to 20 downstream, but this has been altered to slopes of 10 to 1 on both up and down sides. The resulting structure gives a more balanced pressure upon the alluvial bottom. The dam is constructed by forming two dumps of waste material, mostly rock, from Culebra, which correspond to the upper and lower limits of the slopes. Between these dumps material is pumped in from the hydraulic dredges, the ground surface having been mucked and trenched of course beforehand.

At present the dry fills are up to elev. 85, that is the proposed water surface of the lake, and the interior space has been pumped full. In constructing the dam, the dry filling is thrown towards the centre, thus resting upon and sinking

into the hydraulic fill and at the same time crowding out the water. Tests showed a greater solidity on one side of the fill than on the other, so more sandy material was delivered to the soft side. The dam is three quarters done now and has cost about 30c. per c. yd., it will contain 20,000,000 c. yds. when complete.

The rock fill dams proposed for the Ottawa are, of course, much narrower than the Gatun fill and their tops are only 5 ft. above water, while the Gatun dam will have its top 30 ft. above water. Our fills also were not to be staunched with impervious material, as the leakage only meant the passing of the river current, which otherwise would have to be let through the sluiceways. There is no objection however to staunching our fills if it is felt that the extra cost will be warranted.



No. 86.—Spillway Gatun. Ogee dam crest elev. 69, on top of which fourteen stoney sluice gates 45 ft. wide by 20 ft. high will be set.

About the middle of the Gatun dam, at spillway hill, a channel has been cut through to pass the Chagres river flow while the embankments across its two natural channels were being built. This spillway is lined with concrete, its floor being elev. 10, its width 300 ft. and its length 1200 ft. Across the head of this temporary channel, a concrete dam is now being built of ogee section, the top elev. 69.

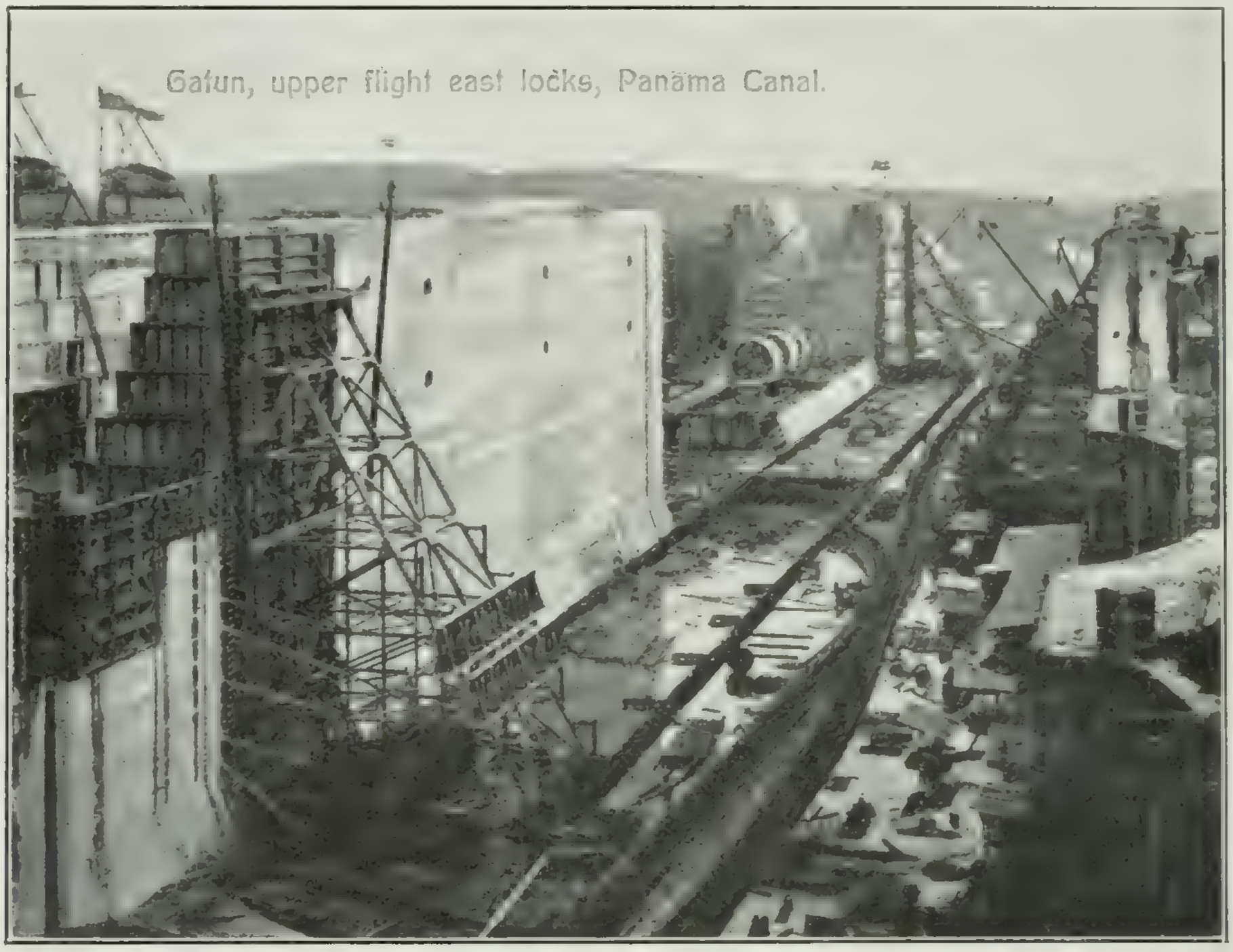
This dam is one-third of a circle in plan and 740 ft. long around the arc; it is hollow, and within the hollow is an arched concrete chamber 8 x 10 feet. This construction secures an air space of about 1 foot between the concrete of the dam and the chamber, which will effectively prevent the seepage of moisture into the interior chamber. This precaution is necessary to protect the operating machinery, which will be set in this chamber, from moisture.

For the time being the 300 ft. width of the spillway is left open to the bottom, elev. 10, but piers 12 ft. apart have been built and arranged for sluice gates. During January and February it is proposed to shut off two-thirds of the channel to elev. 50, and place the sluice gates completing the enclosure and opening the sluices 1st March. This necessitates placing 25,000 c. yds. of concrete, or 260 c. yds. per day.

At end of March sluices will be closed and Gatun lake filled to elev. 50 by August. The lake will be held at this level till the power-house is completed and the gap in the ogee dam filled in.

Upon the ogee dam crest, elev. 69, piers 8½ ft. wide will be built 53½ ft. centres and grooved for stoney gates 45′ x 20′, of which there will be 14, allowing 140,000 c.f.s. to flow from the lake at elev. 85. The spillway will contain 250,000 c. yds. of concrete, over half of which is in place. The foot bridges over sluiceways will be elev. 93.

This illustrates that complicated unwatering problems may be undertaken when the work is done directly and not by contract.



No. 87.—Gatun locks. Movable steel forms and portions of walls.

Locks.

There will be six double locks on the Panama canal, three rising from the Atlantic to Gatun lake, and three falling to the Pacific. At Gatun the three locks are combined, the twin flights being separated by a central wall 60 ft. thick. Double locks quicken canal operation by allowing one boat to ascend while another boat is descending. Their great advantage in the Panama canal, however, is that if one set of gates is out of commission, boats may still pass up and down through the other flight. Thus during a military crisis the destruction of one set of gates will not close the canal, and as the gates are in duplicate, several sets must be badly destroyed before the canal is crippled.

The locks are long enough to accommodate a ship 1,000 ft. long and their width is 110 ft. The side walls are solid concrete about 50 ft. thick at floor level with plumb face and stepped back, the copings being 8 ft. wide. Some of the walls will be 80 ft. in height from the floor, and the culverts beneath floor level will add some 20 ft. to the height from foundation to coping.

The central wall is 60 ft. thick at floor level, with vertical faces, except at the foot, where, like the side walls, there is a batter of 3 ft. in 8 vertical to spread the weight. The central wall is not solid for its full height, but steps

up to an 8 ft. coping on each side after half its height is reached. The space between these twin walls is filled with selected filling, excepting a three story service tunnel for operators, electric wires and drainage. The top edge of wall is battered back from the face about 1 ft. to prevent damage by boats bumping along the face.

The locks are filled through the floor like those at Sault Ste Marie, but the filling tunnel is placed in the wall and connects to the floor openings by lateral tunnels. Through each side wall and the centre wall there is an unlined tunnel 18 ft. diameter—large enough to pass a locomotive—254 sq. ft. area. This conduit is throttled by stoney sluice gates of special design, but the water from the side walls communicates without valves with the holes in the floors. The centre wall culvert, however, has cylindrical valves along its whole length governing the flow to or from the lock chambers on each side at each lateral. In this way one lock can be made to empty into the one alongside, thus saving water. It is also possible to hasten the filling of a lock by using the central culvert in addition to the side wall culvert. The locks can be filled in eight minutes, but this speed will not generally be necessary. It is the berthing of a boat in a lock that consumes time.

The mitre sills of the lock are immense masses of concrete supporting steel beams, which, in addition, are anchored by heavy rods and steel framework.

The gate recesses are much larger than the gates require, in order to allow the escape of water from behind them when opening. The hollow quoin is suppressed and a vertical steel strip, accurately set in the concrete, takes the pressure from a similar strip in the heel of the gate. This contact is so accurate that no leakage around the quoin is expected.

The gate pivot is an immense bronze casting set tightly in the floor concrete. The gudgeon holding the top of the gate into the coping consists of rivetted steel frames, one acting in tension only when the gate is open, and the other designed for tension and compression when the gates are closed and mitred.

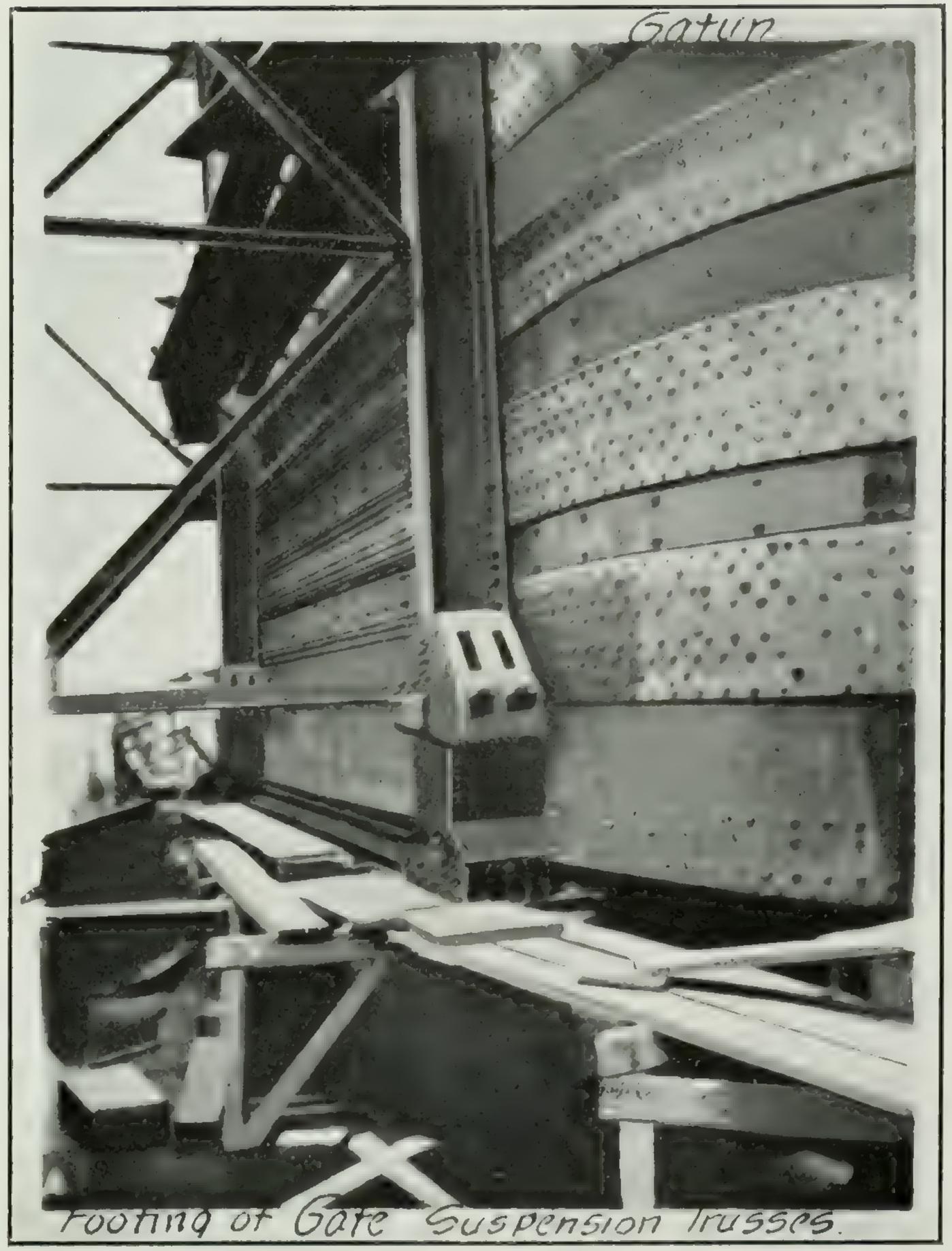
There are forty-six pairs of steel gates, each leaf weighing 300 to 600 tons. The total weight is 58,000 tons compared with 17,000 tons for the Georgian Bay canal. Each leaf is fabricated in the States, shipped to the Isthmus in portions not exceeding 17 tons, and erected in place. Locomotive cranes operating from a temporary steel bridge across the lock chamber, lower the steel to place where it is rivetted. Six millions field rivets will be driven.

To allow space for bolting and babbitting the vanadium steel reaction plates into the wall and onto the quoin post, the gate is erected four feet away from the lock wall. It must also be assembled sufficiently above the floor to clear the spherical pivot casting. Each leaf is therefore built in a temporary steel cradle frame carried on large double wedges with steel rollers underneath. When completed they are rolled into contact with the wall reaction plate and lowered down by easing the wedge blocks. The lower gate leaves are generally 77 feet high by 65 feet wide and the upper leaves 54 feet by 65 feet wide.

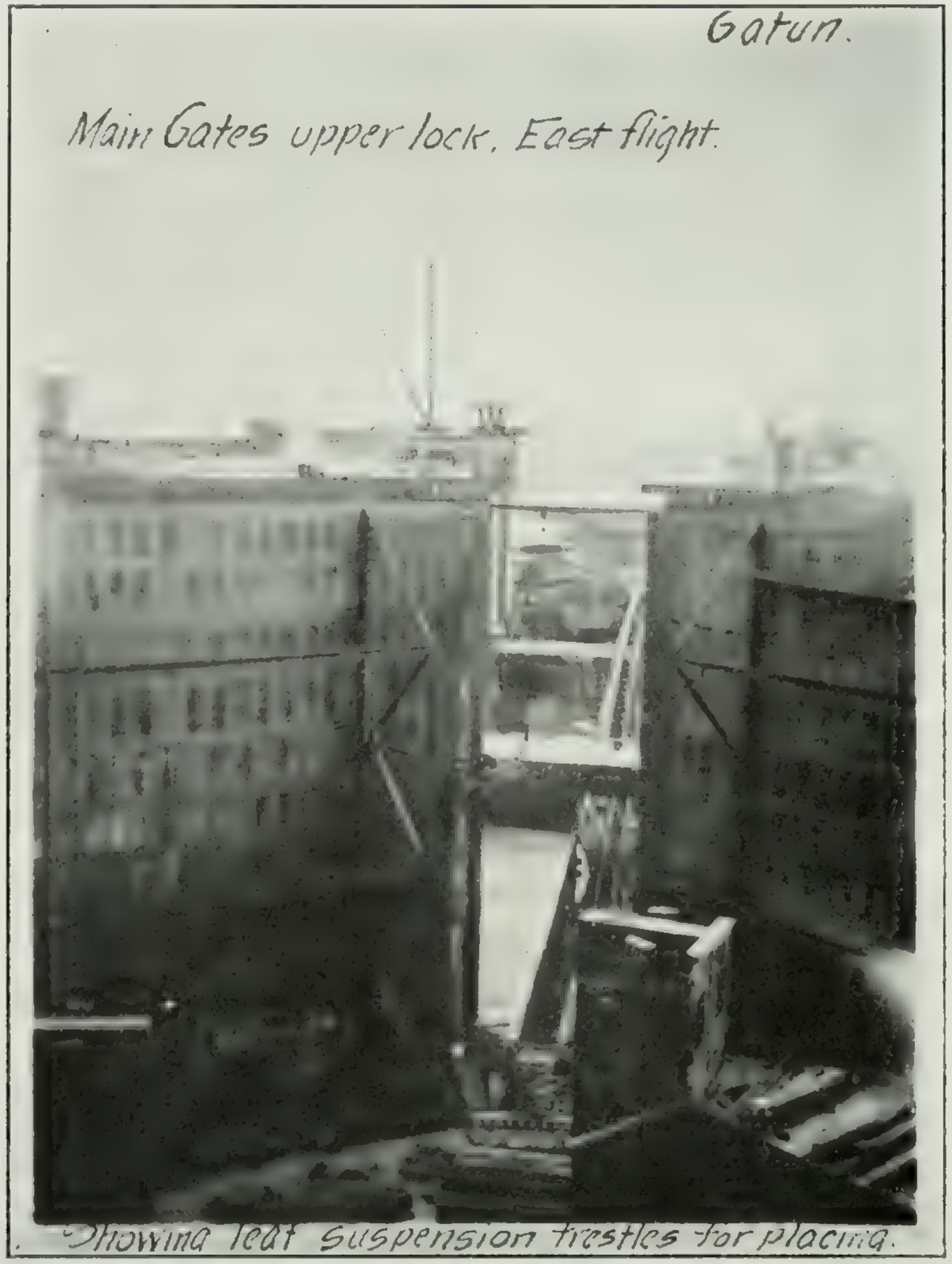
Above and below each lock extends in prolongation of the central wall an approach pier, along which boats slip into or out of the lock chambers. This wall is over 1,000 ft. long and constitutes a great safety device, as thereby boats are led straight and accurately into the lock. Numerous bollards along this wall allow boats to set out lines as necessity requires, and thus break their way before approaching the gates.

It is not the intention, however, to have boats enter the locks under their own steam, but they will be towed in by an electric locomotive, and a canal pilot will be in charge on the bridge with a canal engineer in the engine room.

In addition to this, however, each upper and lower gate of a flight is to be protected by a chain attached to hydraulic cylinders in each wall. If a vessel strikes the chain, its momentum is gradually checked by an ever-increasing



No. 88.—Gatun locks. Gates in cradle frames resting on double wedges with rollers underneath.



No. 89.—Gatun locks. Gates erected in temporary steel cradle frames on which they will be rolled to place, then lowered onto final bearings.

force sufficient to stop a 10,000 ton boat moving at 5 miles an hour in about 100 ft.

The safety of the steel gates is thus assured, but nevertheless, two gates are used at the ends of each lock, so if one pair is rammed, the second pair is still intact.

Should the upper gates be carried away and the level let loose, a swing bridge and needle dam, similar to that in use at Sault Ste. Marie, is provided.

Ninety-five per cent of sea-going tonnage is less than 600 ft. long, so intermediate gates with mitre sills, etc., are provided in each lock. The chamber to be filled is thus decreased and an economy of water effected.

These intermediate gates are protected by a chain barrier as above described.

Above the swing bridge emergency dam, a cassion gate is provided at the head and at the foot of all locks, that can be floated into place and bar the entrance to the whole flight of locks. They can thus be laid dry for examination, painting, repairs, etc. A cassion gate is steel-sheeted on both sides and by turning it about either face can be left dry to allow of scraping, painting and repairs. In this way, therefore, all the steel work can be examined and painted, a matter of considerable import in the hot, damp climate of Panama, where steel is ravaged with rust.

The back of the lock walls is stepped, and against it clay filling will be placed. At each end flare walls will revet the back filling to a junction with side slopes.

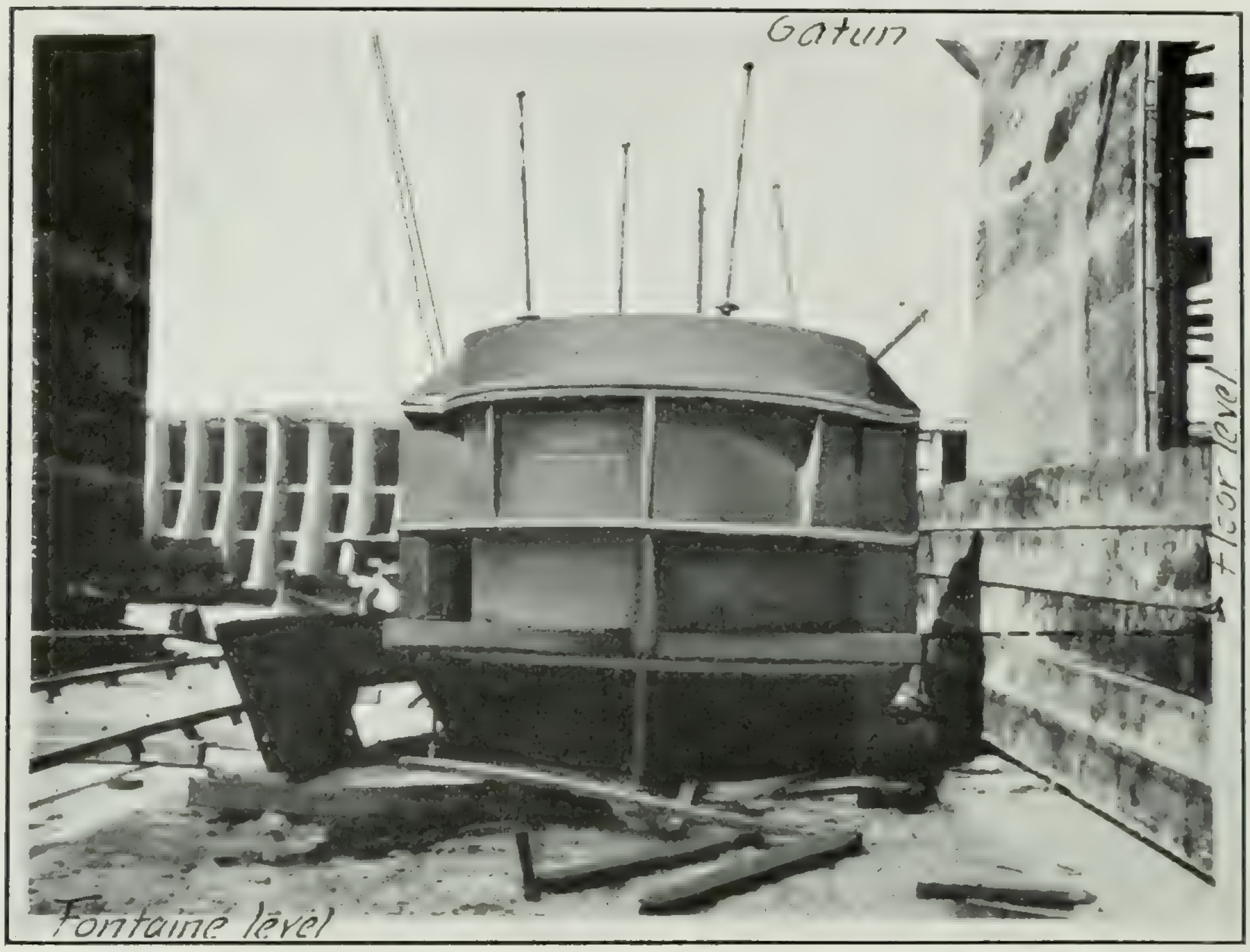
The coping of the lock will be perfectly flush. The gate recesses are covered over with a steel cantilever frame filled with concrete. The lock gates do not extend quite up to the coping, and the hand rails are arranged to turn down flat on top of the gates. Thus the gate closes into the recess beneath the projecting coping.

The operation of the lock is conducted in the passageways beneath the coping, these being covered with prism glass to give light. The machinery and the operators are thus protected during the rainy season.

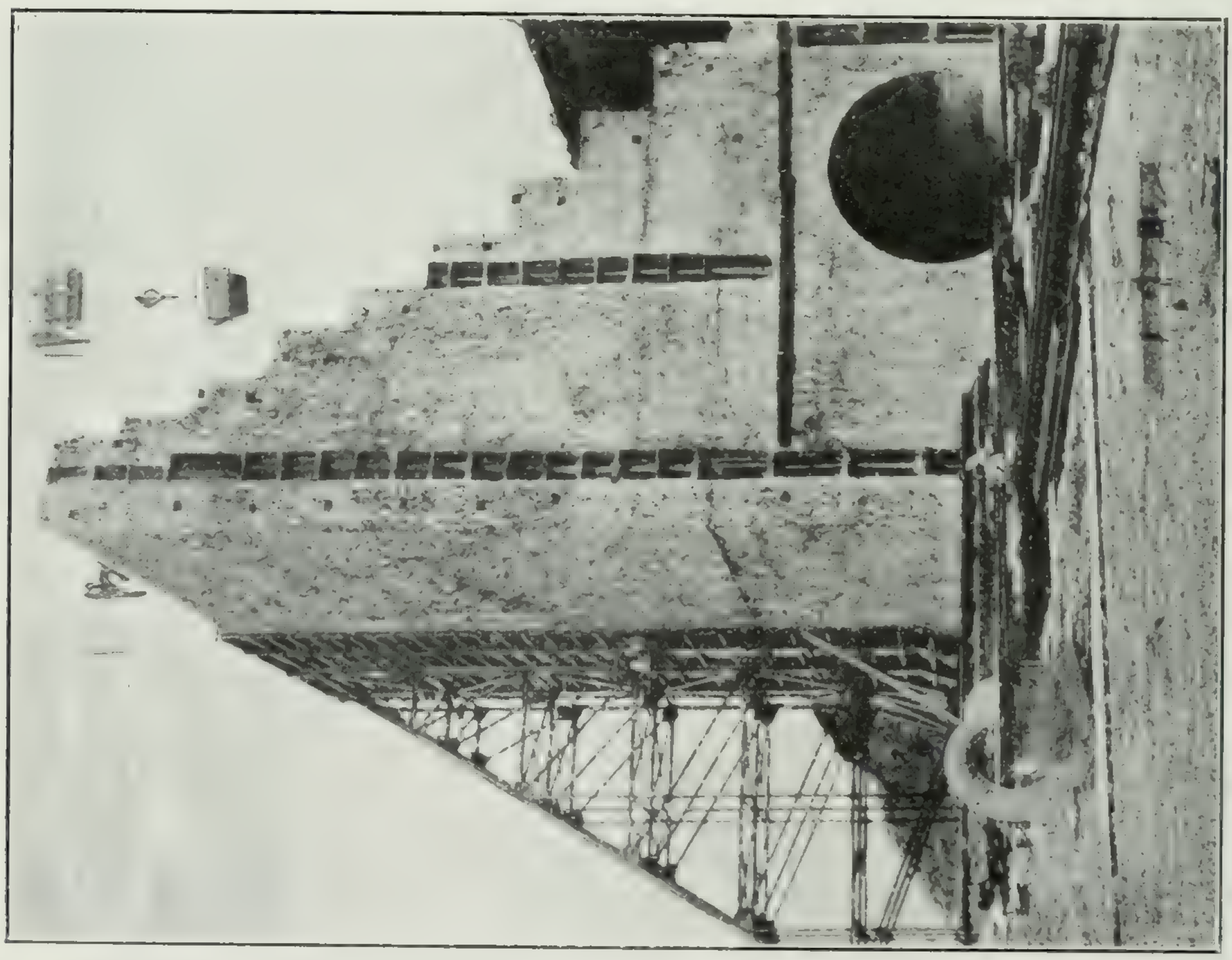
The lock gates are operated by a rigid strut attached 17 ft. out from the heel. This strut is actuated by a horizontal bull wheel 19′ 2″ diameter, which turns through 197°. The strut is connected to the rim of the bull wheel by a pin and the bull wheel is revolved by an electrically driven pinion engaging with the outside rim. In closing the gate the wheel revolves several degrees before the gate moves an inch. This is a very elastic apparatus for communicating motion to a lock gate weighing 900 tons in air. To mitre the gate, the power remains the same, but the wheel revolves several degrees again without moving the gate perceptibly. Thus the push is automatically cut off. To break the mitre, the wheel again revolves some distance to move the gate through a very small space. This principle is new and commends itself in all respects except the cost, which might possibly be cut down, but eighteen tons of machinery to open a lock gate seems excessive for ordinary practice.

Lock Valves.

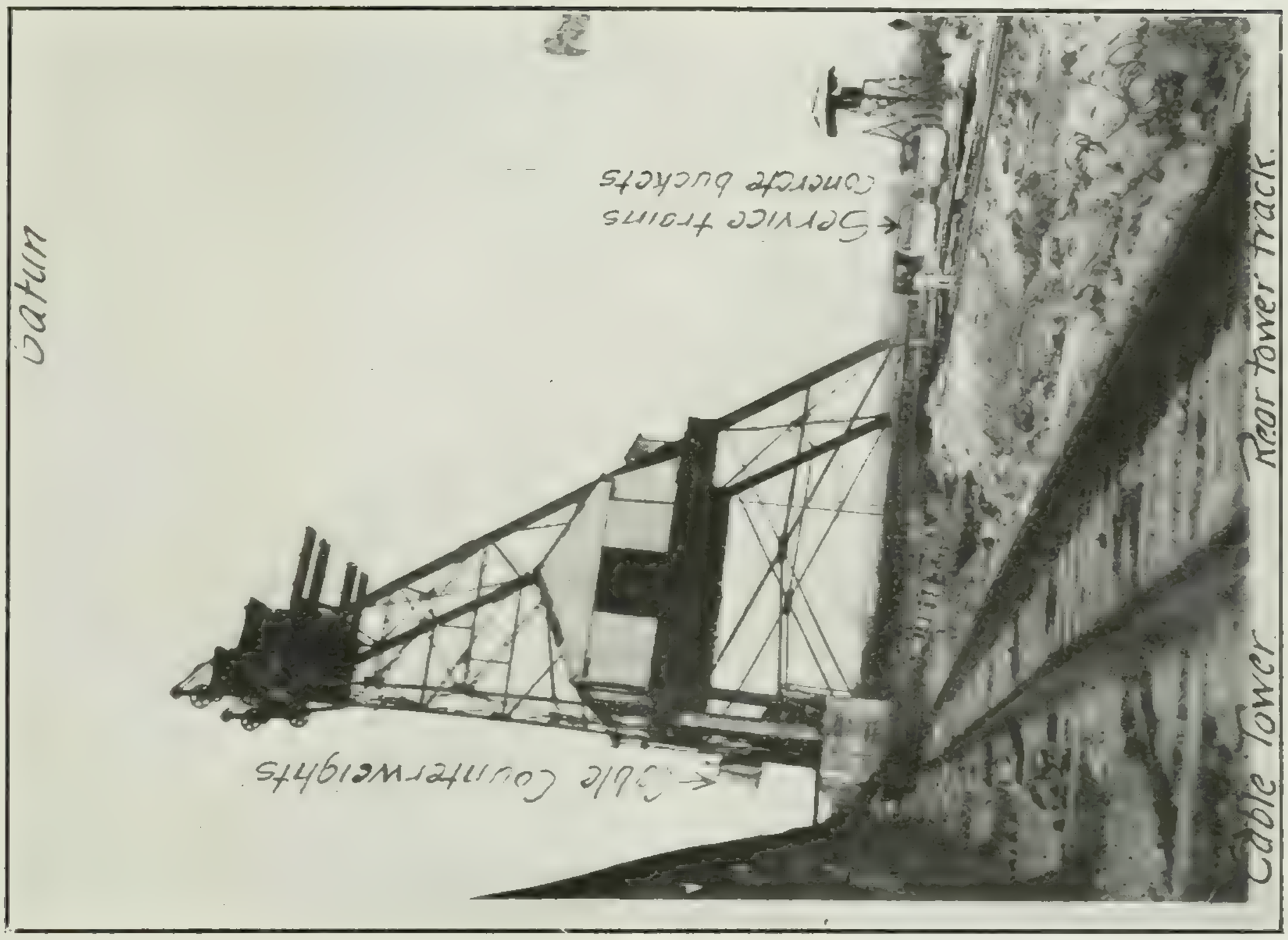
The filling and emptying of a lock as before stated, is done by large culverts in the central and side walls from which the lateral conduits lead beneath and discharge up through the lock floor. In the side walls, the main culverts are throttled by stoney valves in pairs, the full area 264 sq. ft. being considered too great for a single valve. A pier was therefore set in the middle of the culvert, which was enlarged, dividing it in two. Each half is governed by a stoney valve, the flow however joining above and below the valve chamber. A valve weighs about eleven tons.



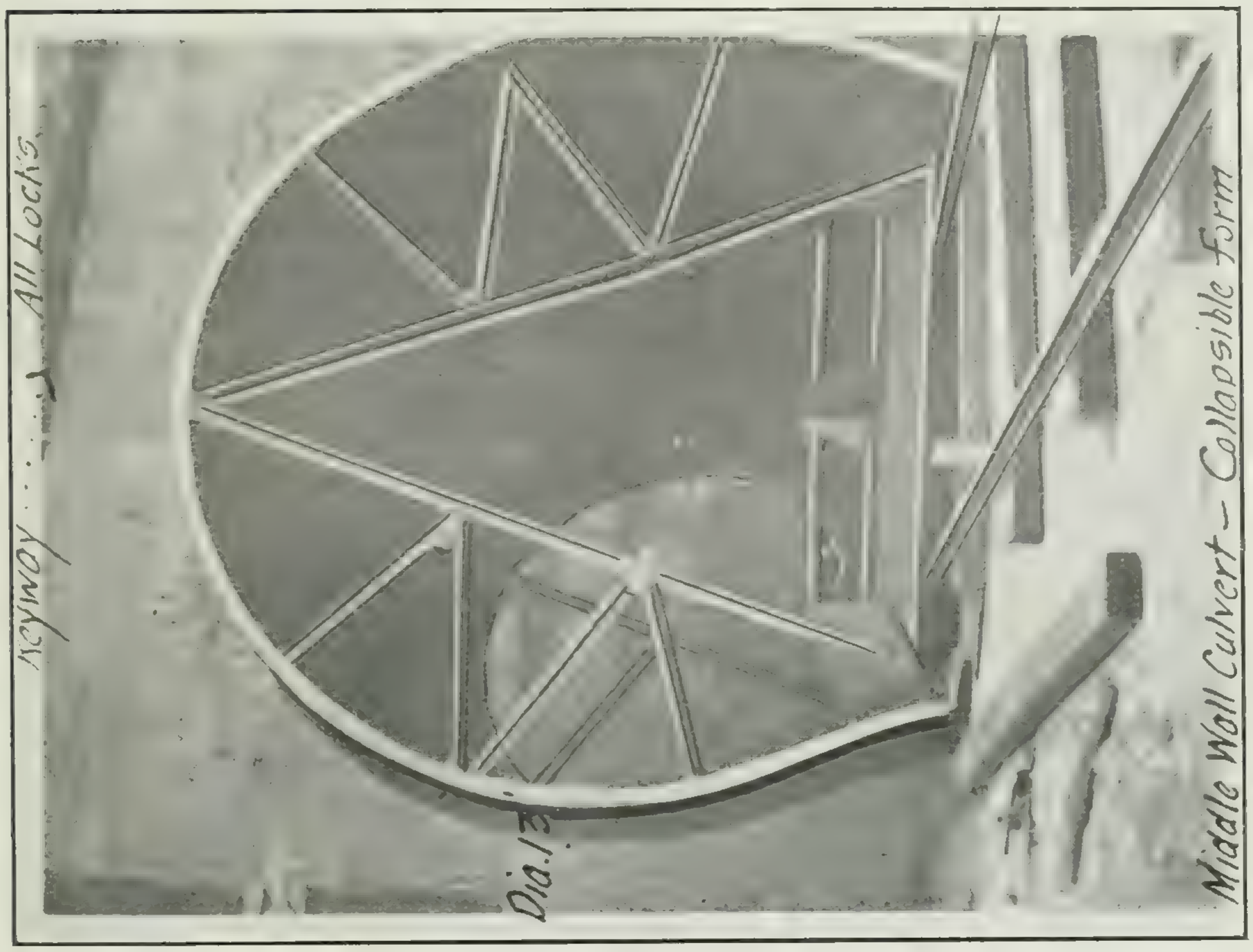
No. 90.—Cylinder valve central wall culvert, Gatun locks.



No. 91.—Gatun locks. Section of main wall showing filling culvert, movable steel forms and bucket of concrete suspended from cableway.



No. 92.—Gatun locks.—Steel tower 85 feet high moving track rear of lock wall supporting one end of cableway 850 feet long extending completely across the locks.



No. 93.—Collapsible steel form for main culverts, mounted on truck. Culvert is shown of a railway tunnel.

They are called stoney valves, but are really such a modification that they may be considered as a new design. The valves are about 18 ft. x 10 ft. formed of 20 inch girders covered with buckle plates one-half inch thick. They slide up on the usual roller clusters which rise at half the speed of the gate.

The valve is raised or lowered by a single stem fixed to the middle of the top girder. The top of the stem is attached to the middle of a horizontal cross head borne at each end by vertical screwed threaded pillars. When the screw pillars are rotated, the crosshead and valve rise or fall, each pillar being operated by electric motors. Each side of the valve is provided with two guide wheels to ensure verticality of motion.

The central culvert through the middle wall is governed at each end by stoney valves and in addition each lateral along its whole length is closed by a cylindrical valve that opposes flow in both directions when closed. There are two rows of these valves, one governing the flow to the right hand lock chamber and the other set governing the flow to the left hand lock chamber.

Each of these valves is governed by a separate motor operating on a vertical stem. When the lower drum is lifted into the upper drum or cap, the water flows in through the zone thus opened and plunges down into the conduit leading beneath the floor.

The moulds used at the Gatun locks were immense steel plates, carried on a car which moved along the face of the wall; the idea was to build by alternate sections but it was not completely carried out. The concrete at Gatun was mixed by a battery of mixers at the lower end of the lock and conveyed by narrow gauge steam trains to one of the four cableways. The bucket was lifted from the car and conveyed across the lock on the cable to its place in the wall.

The large steel forms are unwieldy and there does not seem to be any advantage in building the whole height of the lock wall at once. Special wooden forms had to be used for the gate recesses and all other breaks in the general line of wall.

The cableway was 800 ft. span and the towers 85 ft. high. This again was a very cumbersome thing to move and the oscillation in setting a skip is always troublesome.

Gatun Lake.

Gatun lake will be an artificial basin of fresh water supplied by the Chagres river. Its area will be 164 square miles and the depth will be as great as 85 feet, the surface being 85 ft. above Atlantic ordinarily and can be raised 2 ft. more if required. The rainfall has been recorded for many years, both by the French and Americans and studied with care. During nine months of the year there is a great surplus, the total annual fall being 103 inches for the central part of the zone. This falls between May and November and there is practically no rainfall for two months.

The channel bottom through Gatun lake is elev. 40, so even in fresh water a boat with the extreme depth of 40 ft. would be able to pass with the lake surface, elev. 81·7. The surface however will be allowed to rise to elev. 87, thus storing a layer over 5 ft. thick on 164 square miles, or 820 square mile feet. This storage would produce a flow of 262,400 c. f. s. for 24 hours, or 2,600 c. f. s. for a period of 100 days. Twenty lockages through the lake per day would require 500 c. f. s., leaving a large surplus from the flow of the Chagres river. March is the month of least flow and the mean for twenty years is 1,600 c. f. s. for the Chagres river.

Every precaution is taken however, to prevent leakage and an economy of water in lockages can be made by using the water in one lock to partly fill the

lock alongside. At Gatun there is a power-house that will generate a 20,000 horse-power for canal purposes and this is duplicated by a steam plant.

The summit basin proposed for the Ottawa navigation is about 25 square miles in area and the drainage basin, tributary thereto, is about 300 square miles which can be doubled if necessary. At the rate of 20 lockages a day, about 250 c. f. s. would be expended, but the natural inflow falls as low as 100 c. f. s. With storage however, a supply of 435 c. f. s. is available which can be increased by 700 c. f. s., if the Amable du Fond waters are diverted.

At Panama it is stated, that allowing for power, evaporation, leakage at gates and valves, a dry season of minimum flow following a wet season of minimum rainfall, forty passages per day are possible, in fact as many lockages as can be made in 24 hours.

When the Gatun basin is filled, large areas of jungle forest will be permanently drowned, but only the boat track 1,000 ft. wide will be cleared of vegetation, the cost per acre being $24.50 for about 182 acres. The drowned timber is not so floatable as the soft woods of the Ottawa, but still a good deal of trouble from driftwood is to be expected for the first few years.

There are six fairly sharp bends through Gatun lake in 19 miles, two of these curves are about half a mile radius and within one mile of one another, each turning nearly 90 deg. and in reverse directions.

The lighting system is very elaborate. Gas and nun buoys are placed at close intervals along the sides of the entrance channel of Limon Bay and light and fog signals are located on the west breakwater. Through Gatun lake each leg is marked by ranges and in addition there are gas and nun buoys along each side. These are anchored by a chain and block of concrete. There are no ranges through the Culebra cut, but lighted beacons 15 ft. high will be placed along the tow path. Like the other types they are built of reinforced concrete and are lighted by acetyline or electricity. All lights and buoys can be distinguished from one another and from lights on shore by a system of flashes.

Vessels take the forward range, which is set 125 ft. to the starboard side of centre line. When boats are passing therefore, they do not vere from the range line and pass 250 ft. from centre to centre. All marks and ranges have reference targets to check their position and facilitate replacing.

A feature of Gatun lake is that, being fresh water, barnacles and marine growths will be removed from hulls that lie a few days in its waters. To this end it is expected that many vessels will anchor outside the channels for short periods.

Panama Railway.

The original railway was built for the gold rush to California, and it is said a man lies buried for every tie laid, owing to the climate and lawlessness. The gage was five feet and this width was retained when improving and double tracking for the canal construction.

The Gatun lake will flood out some 20 miles of the railway, so it has been diverted from Gatun around the north side of the lake, in places three miles from the original location. There were great quantities of material available from the Culebra cut and with this large embankments have been made for the new railway across arms of the artificial lake. These embankments, however, had to be built on swamp ground overlying soft clays and rock.

From Gatun to Frijoles, 9 miles, the railway embankments are very large, 3,000,000 c. yds. from the Culebra cut being disposed of in this section. The lake elevation is 85 and the top of railway bank 95, and as there is water on both sides, large reinforced concrete culverts are provided to equalize the surface and prevent head against the earth fill.

Two soft bottoms at Quebrancha and Baja river crossings gave trouble, the banks tending to sink through the original surface. At the first place the ground elevation was 20, and borings showed over 150 ft. to rock through soft clay and sand. The first lift of the embankment was carried at elev. 50, that is 30 ft. high and filled level out to 2 to 1 slope stakes, a width of 340 ft., as the bank is 40 ft. wide on top at elev. 95. This spread the weight of the embankment over a large area, but even then the swamp heaved up along the out toes and had to be further counterbalanced with material. A careful watch was kept on the settlement and upheaval, while the remainder of the bank was being built from trestle work.

At Baja river the ground is elev. 25, and there is the softest kind of clay for 60 ft. down to rock. The filling has pushed away this material and is now practically on rock.

This experience is interesting in connection with rock fill dams upon a soft bottom. If the soft mud is 10 or even 15 ft. deep, it would seem advisable to dig a key trench and fill it with loose rock; thus the centre of the fill would extend down to hard material, and no matter how the swamp upheaved, the head of water could not blow out an opening. The digging of a 10 or 15 ft. trench through a swamp is a proposition to be avoided unless a suction dredge is available and it might be quite safe to spread the base of the rock fill and depend on the compacting influence of its weight alone. The weight of the water above the dam would tend to balance the swamp against the rock fill, but the resultant thrust through the fill would increase the pressure upon the swamp along the downstream edge of fill. The Can. Pac. Ry. rock banks were made to cut into and sink through the muskegs near French river.

It was the intention to carry the railway along the tow-path through the Culebra cut, elev. 95, but owing to slides a temporary line has been located some distance to the east.

Culebra Cut.

The cut is 9 miles in length through the divide between Atlantic and Pacific. It will be 300 ft. wide at bottom, where straight, and over 400 ft. at bends, such as Cunette angle. The bottom grade is elev. 40, water surface elev. 85 to 87, tow paths elev. 95, and each tow path is 40 ft. wide. At present no part of the cut is above elev. 95, and at each end it is down to grade. Excavation has been continuous since 1880 by the French company, which removed 20,000,000 c. yds. to May, 1904, when 97,000,000 remained to be dug by the American Commission. There are 55 miles of 5 ft. gauge track in the cut. The remaining portion is about 5½ miles long and contains about 20,000,000 c. yds., and last year over 16,000,000 c. yds. were excavated. In January, 1912, the excavation was 1,600,000 c. yds.

Slides have greatly increased the excavation, and it has been impossible to foretell their location or extent and arrange steam shovel tracks accordingly. The only thing possible is to remove the slides as they occur. The Cucaracha slide is now considered dead; it amounted to 3,500,000 c. yds; but at Culebra 7,000,000 c. yds. have been removed and the end is not yet. Material is being removed from the top of the latter, with good effect, as the heaving of the bottom, due to earth pressure from above, is becoming less. When the heaving at the bottom of the cut has ceased, the centre is lowered for drainage and excavation proceeds. Similar methods are being used with other slides, especially that opposite Culebra, on the east side of the canal.

On the afternoon of February 10, 1912, a portion of the bank of Culebra cut below the old French 90 metre level, on the east side of the cut, opposite the village of Culebra and about 500 yards north of Gold Hill, broke off, carrying

away the 95-foot berm and partly closing the recently completed drainage ditch in this locality. All tracks in the pioneer cut and to the eastward of it will have to be regraded and rebuilt. The amount of material in motion in this slide is about 250,000 c. yds., but other cracks have opened to the south and east of the broken mass, on the old French 90 metre level, which apparently indicate that there will be a considerable addition in the near future, possibly as much more. The closing of tracks on the east side of the cut will lessen the output for some days to come.

The old slide on the north end of the French dump on the west side of the cut at Culebra has renewed its activity after a quiescence of over two years. It is estimated that 750,000 c. yds. of material are in motion. The boundary of the moving mass corresponds closely to that of the clay slide which moved into the canal about two years ago, leaving underneath it stratified rock sloping about one in ten towards the canal. This stratified mass has apparently broken off in a mass, 30 to 40 ft. high on the face, and is advancing towards the prism at the rate of 18 to 24 inches a day. The ground has not heaved up in the bottom of the cut. The material is easily handled.

In addition to slides of earth caused by wet material moving on an inclined surface, there are rock breaks. The bed rock supports its overburden of clay when intact, but if the key is cut out, the softer layers are squeezed out into the prism and the harder layers break off. That is, the crown of the arch is removed and the haunches are forced toward one another.

Cost of Excavation.

There seems to be no separation of earth and solid rock excavation, probably because the earth merges into tough material, and soft shales alternate with diabase and volcanic rocks, including lava ash. The general cost per c. yd. in 1908 was $1.03; in 1909, 79c.; in 1910, 74c.; and in 1911, 63c. This reduction in cost for the deeper excavation is remarkable. Three contracts for excavation were let at the following rates:—

160,000 c. yds. at 35c. per c. yd.

200,000 c. yds. at 21c. for earth, 25c. for soft rock, and 30c. for hard rock, which was later compounded to 34c. for all kinds of earth and rock.

100,000 c. yds. at 21½c. per c. yd.

Blasting.

The material is now all rock and requires blasting before removal by shovel. Churn or well drills, air driven, do much of the work, tripod drills being used for oblique holes and in cramped locations. The churn drills are worked in batteries of four to twelve, the holes average 15 to 30 ft. in depth, and are spaced 6 to 16 ft. apart. There are three air compressor plants all connected together by a 10-inch main 5 miles long, which has branches 4 inches to 6 inches leading into the cuts.

On account of water in the drill holes, powder cannot be used for blasting, but 45 to 60% dynamite takes its place. 2¼ million pounds were saltpetre dynamite 60%, and 3½ million pounds saltpetre dynamite 45% nitroglycerin. Stringent rules are enforced regarding explosives; the distribution is under a supervisor, and they are always handled by the same engine train and crew. During last year nearly 6 million pounds of dynamite were used and only two men killed; for two years the record is 14 million pounds used and four men killed. This is most remarkable and should be given the greatest publicity,

both on public works and in mining centres. A number of accidents did happen, resulting in the appointment of a Board of Enquiry that framed rules which are published herewith.

When the holes are drilled, the bottom is sprung by exploding a small charge of 4 to 6 sticks, so as to form a large chamber. This is then cleaned out and 25 to 200 pounds of dynamite is packed in and carefully tamped. The electric current for exploding is taken from one of the lighting plants by overhead wires across the cut, from which connection is made to a series of small shacks spaced along the length of the work. From these shacks lead wires are strung to the holes, which are connected up in ladder series.

Steam Shovel Work.

The only excavating machinery used on dry work is the American steam shovel of the Marion, Bucyrus, etc., types. There are a few clam shell and orange peel excavators used with locomotive cranes in special situations.

The steam shovels cut their way through an area of blasted rock in a path about 35 ft. wide at bottom and 50 ft. at top. It is about 10 ft. deep for a first or pilot cut and when widening the depth is increased to 15 or 25 ft., but the width is then only about 26 ft.

The 95 ton machines give the best satisfaction and with a 4 or 5 c. yds. capacity dipper, they can remove rocks of 6 c. yds. When a rock is too large for the dipper, a dobie shot or mud shot of three sticks is placed upon the top surface covered with dirt and exploded by fuse.

The steam shovels work longitudinally through the Culebra cut with an ascending grade of 36 ft. per mile to a summit point, thus securing drainage. The long cut reduces the time lost in moving back to a minimum. The excavation is done in benches. The track, upon which the cars to be loaded are pushed up to the shovel, is generally level with the shovel track in widening, but is as usual above the shovel track when a pilot cut for deepening is being made. The shovels approach each other in echelon and are moved back from the meeting point or summit, there being a continuous track left behind each shovel.

In 1904 the summit of the Culebra cut was a little past mile 36 and it was elev. 193. The summit has now moved a mile nearer the Atlantic (Mile 35), and the summit is elev. 95, but this elevation may be said to extend for a mile north and south.

Disposal of Material.

The shovel output has been used to fill swamps, to build the Gatun dam 25 miles away, and for the new railway embankments. Much goes now to make up the breakwaters at Colon (Toro Point 32 miles), and Balboa 12 miles, or the dam at Miraflores locks 6 miles distant.

All tracks are 5 ft. gauge, which admits of a wider car and seems to lessen derailments. Twenty flat cars go to one train, or from 25 to 35 steel dump cars, the latter being used where the dump tracks are curved and irregular.

The Lidgerwood trains consist of flat cars with one gondola side to guide the unloading plough. Arrived at the dump, the winch car for drawing the plough is shunted next the engine. The train backs between two uprights to which the cable wire is temporarily attached and it thus unwinds from the winch car along the middle of the train to the car bearing the plough at the other end. The train then advances out to the dump, the plough car leading and by winding in the cable on the winch, the rock and earth are ploughed off along one side. Between each flat car is a steel apron, bridging the open space, for the plough to slide over.

The plough used at Panama has developed far past those in common use for ballasting operations. Heavy rock has to be ploughed off, so the machine has to be very solid while the stake pockets holding the vertical side against the wedge action must be very strong. Along the open side of the car a strip 5 inches wide has been added to increase the floor width and cause the load to fall further away from the rail. Otherwise rocks and earth tend to roll back upon the rail giving trouble. On curved track, the plough cable is guided by snatch blocks attached near the end of the flat cars.

The longitudinal heap of rock and earth is spread away by a car provided with heavy wings hinged to its sides. These wings are forced out by a rack and pinion and can be raised if the material proves too stubborn. When the spreader can no longer work, the track is moved over by a derrick car which raises track and ties clear of the ground and then pulls it sideways about 3 ft., but if the rails will allow as far as 9 ft.

The dump cars are all of steel and of about 10 c. yds. capacity. They tip by compressed air from the locomotive, one sort having a horizontal cylinder and others a vertical. The latter is preferred as it allows a steeper angle of dump, which is a great matter in such a wet country.

Wet clays have been dumped from these cars at the rate of 8 cars, each 10 c. yds. capacity, in 20 to 30 seconds by a crew of 12 men along 400 feet. The material was spread by the machine and then thoroughly saturated by water hose. A small gutter being formed along the ends of ties to retain the water the clay soon slid to a slope of 22 to 1 and flowed into the Chagres river where the current carried it away.

Unwatering.

The whole area around the Culebra cut has been systematically ditched to carry away the excessive run-off during wet weather and decrease the tendency to slide. Rivers and streams crossing the line of cut have also been diverted. The Obispo river is carried in an artificial channel along the east side of the cut. Last year owing to a rock slide, it gained access to the cut and submerged several shovels and cars in the north end for three days. A temporary wooden flume was rapidly constructed to pass the river around this rock break.

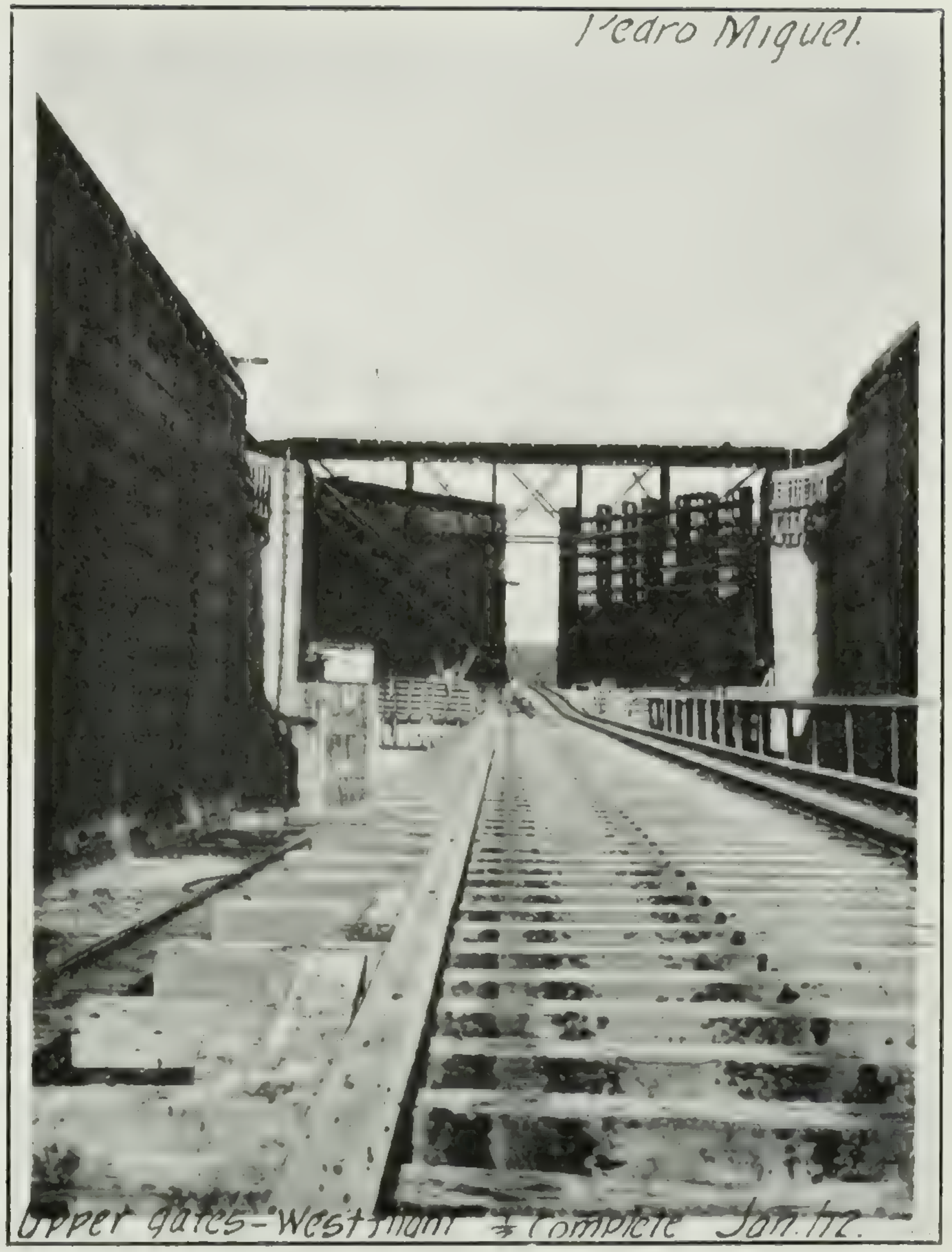
The Chagres river reaches the canal at Gamboa, the north end of the Culebra cut. Its low water surface is elev. 43, that is 3 feet above canal bottom and it has risen 25 ft. in 24 hours, or to elev. 68. There is a temporary earth dam to defend the cut against this river in ordinary flood, but extreme freshets overtop the dam. To drain off such floods, the dam is pierced with 24 inch pipes, provided with valves and in addition there is a pumping plant. This consists of three pumps, each capable of discharging 12,000 gallons per minute, or 26 c. f. s., which work in a sump pit 8 ft. below canal bottom, elev. 32.

Pedro Miguel Lock.

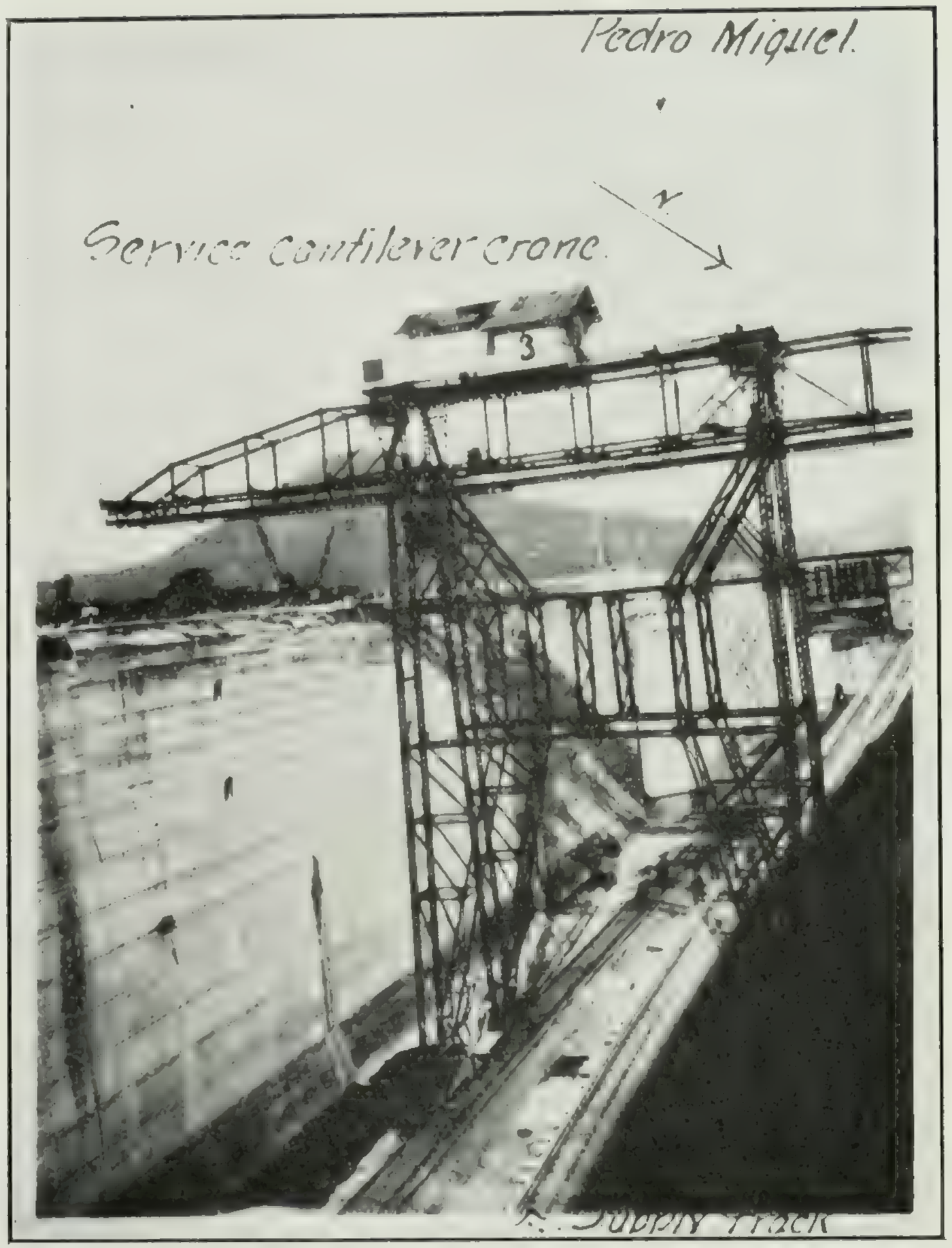
This is a double lock like the others, the lift being 30 ft. from Gatun lake, elev. 85, to Miraflores lake elev. 55. The foundation was excavated in rock by steam shovels and the excavation below floor level for culverts, etc., was done by pick and shovel loading into skips, handled by derricks and locomotive cranes.

It is to be noted that the excavation below floor level being done by hand work is expensive, and there is also the danger of meeting water at the increased depth. The system of lock filling by side culverts and laterals above floor level overcomes this expense and risk.

The concrete laying began July, 1910, and it is now practically complete, in fact the bulk of the work was done in one year, about 850,000 c. yds.



No. 94.—Pedro Miguel lock. Upper gates in course of erection showing temporary bridge from which locomotive cranes place steel shapes. Note railway track and guard rails.



No. 95.—Pedro Miguel lock. Building crane with cantilever arms extending over lock walls. Material brought beneath on tracks. Crane can be moved whole length of lock on its own tracks and power.

The lock gates are now being erected, as well as other steel work and some back filling is being done. The cantilever cranes, or steel frame travellers used for placing concrete, are available for setting steel, etc. The part of the plant used for mixing concrete has been moved to the Miraflores locks.

Construction Methods.

When the lock pit is down to grade, the floor concrete is laid and the inverts for the large side wall culverts placed. The form for the culvert itself (18 ft. diameter),is sheet steel making about seven-eighths of the circle,the invert forming the remainder. These steel forms are placed over steel framing mounted on small cars and arranged with jack screws to allow of collapsing the sheet steel form and withdrawing it when the concrete is set. The form for the drop curve joining the culvert of the upper lock with the lower one is built up like wood stave pipe.

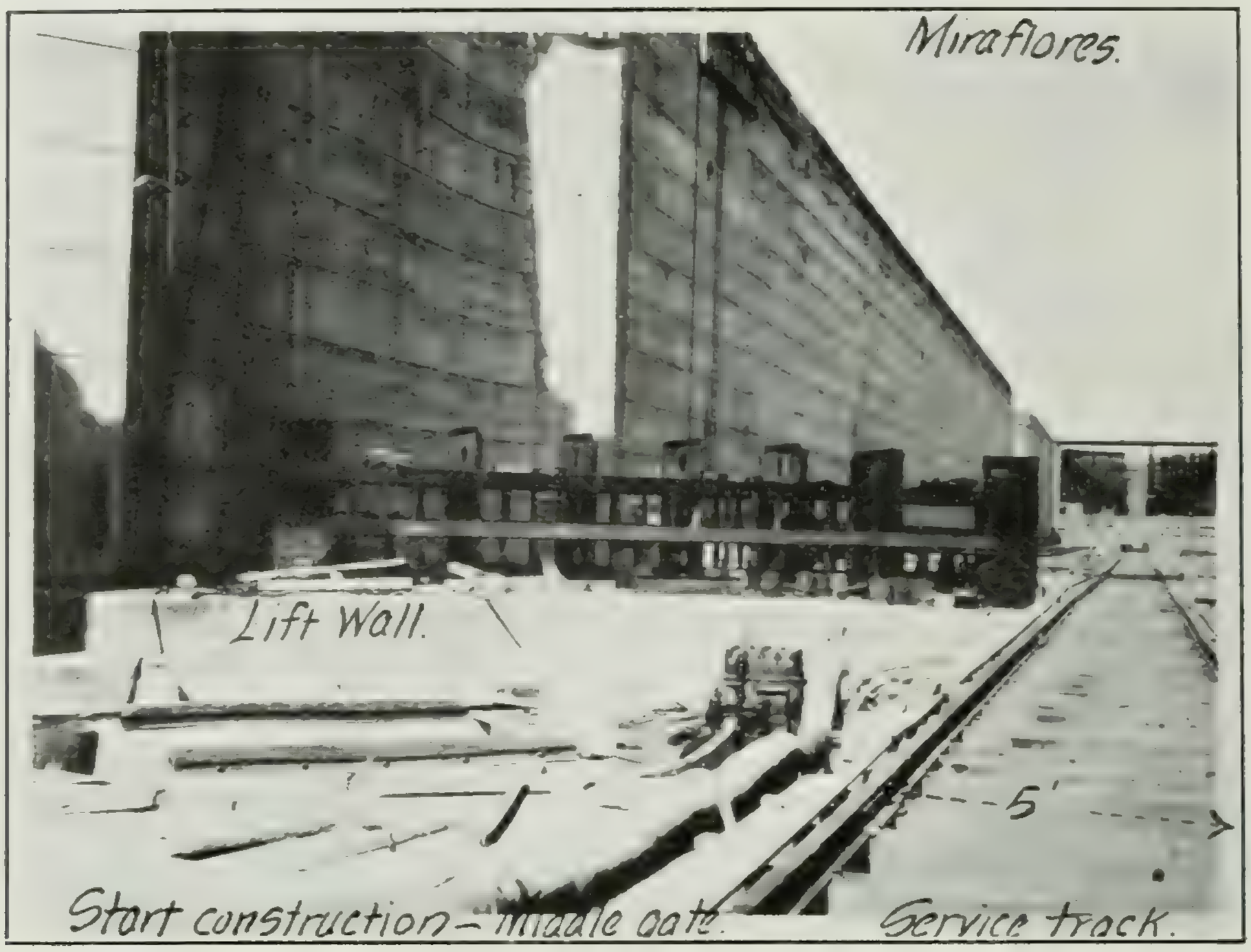
The various cast iron frames for the stoney sluices and the seats for the cylindrical valves are set and bolted to place, after which the concrete placing is not so much interrupted.

At the Pedro Miguel lock, a balanced cantilever crane travelled along tracks in prolongation of the central wall. Supplies of stone and sand were brought up by locomotives and cars from Balboa and dumped from a trestle along each side of the canal prism. The sand was dumped towards the outside and the rock towards the centre of the canal prism.

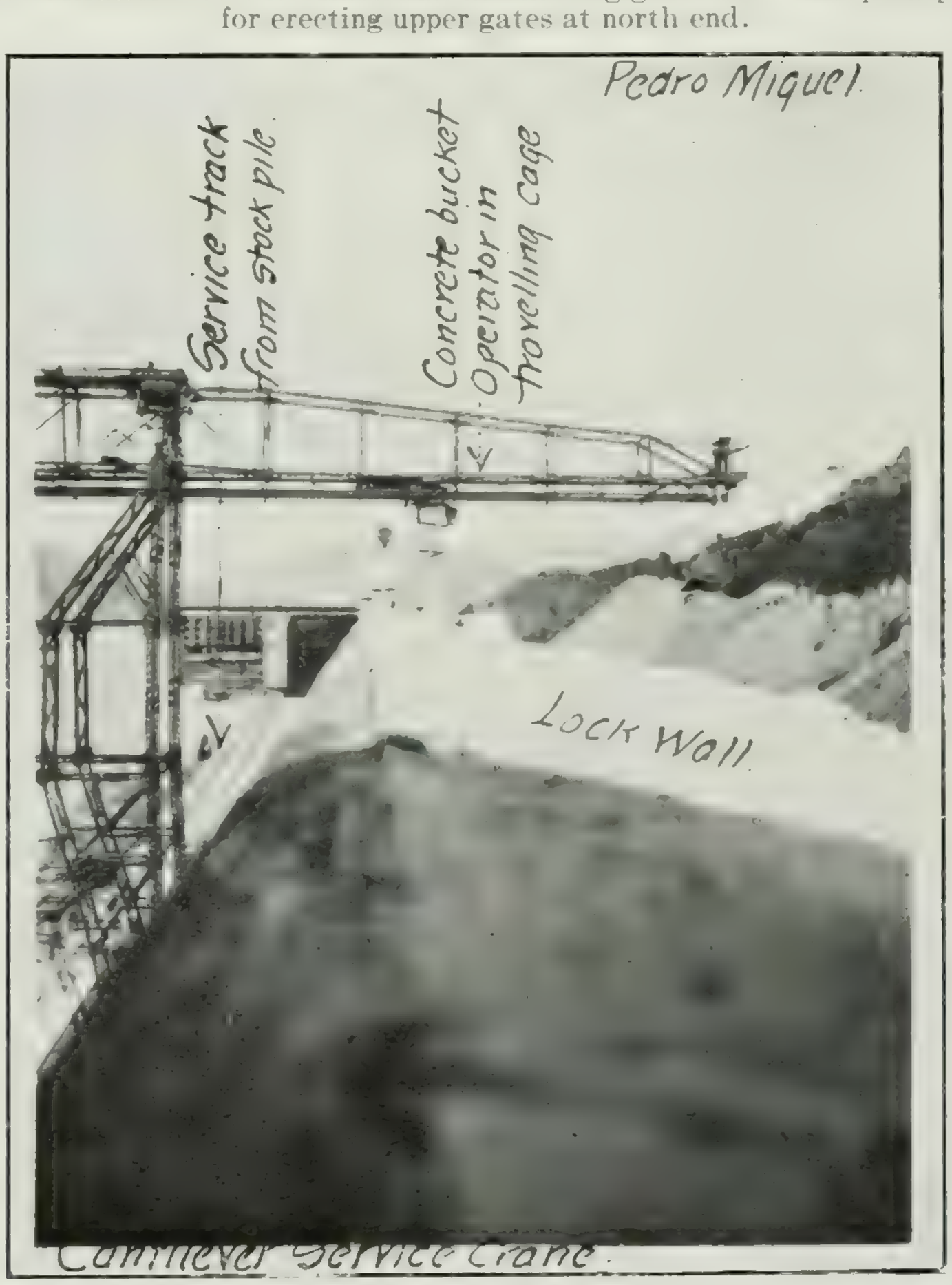
Each arm of the cantilever was provided with a trolley and Hewlett excavating bucket. The bucket was run out, dropped down and grabbed full of stone, then hoisted and moved into the tower and spilled into the bin. The same thing was done with the sand and to each stone and sand bin was a 2 c. yd. concrete mixer set below the bins in the tower of the crane. Cement was transferred from box cars to the mixing platform by unloading elevators. The Pedro Miguel lock berm cranes each have two 2 c. yd. concrete mixers in the tower bases. These mixers discharge directly into two cubic yard buckets, which are carried into the lock pit on 36″ gauge flat cars hauled by Porter locomotives. The supply of materials to as well as the discharge from the mixer, is controlled from the mixer platform. The time taken in mixing and discharging each batch of concrete is recorded by an automatic instrument, thus furnishing records for the division office. The berm cranes can be moved along their tracks a distance of 700 feet by steel cables, which run from the machinery house in the crane to dead-men located on the tracks.

While the chamber cranes were designed chiefly for placing the concrete in the lock walls, they have been very useful in moving the steel and wood forms. The cantilever arms of these cranes are not of equal length, the arm extending over the central wall not needing to be as long as the one over the side wall. Each chamber of the lock has two cranes running parallel with its longitudinal axis. The chamber cranes have trolleys which handle concrete buckets of the double leaf drop-bottom type, that are dumped by the operator from his cab on the trolley. The concrete buckets on being brought into the lock pit are picked up by the chamber crane, carried to and dumped into the lock walls and the empty bucket returned to the car, then hauled back to the mixer in the berm crane for a new supply of concrete. Four chamber cranes at Pedro Miguel have a combined hourly capacity of 320 c. yds. of concrete. The chamber cranes have a similar mode of movement along their tracks as the berm cranes.

When the concrete work in the Pedro Miguel locks is completed, the berm and and chamber cranes will be removed to the Miraflores lock site. At this place four berm cranes will be used, that is one in conjunction with each chamber



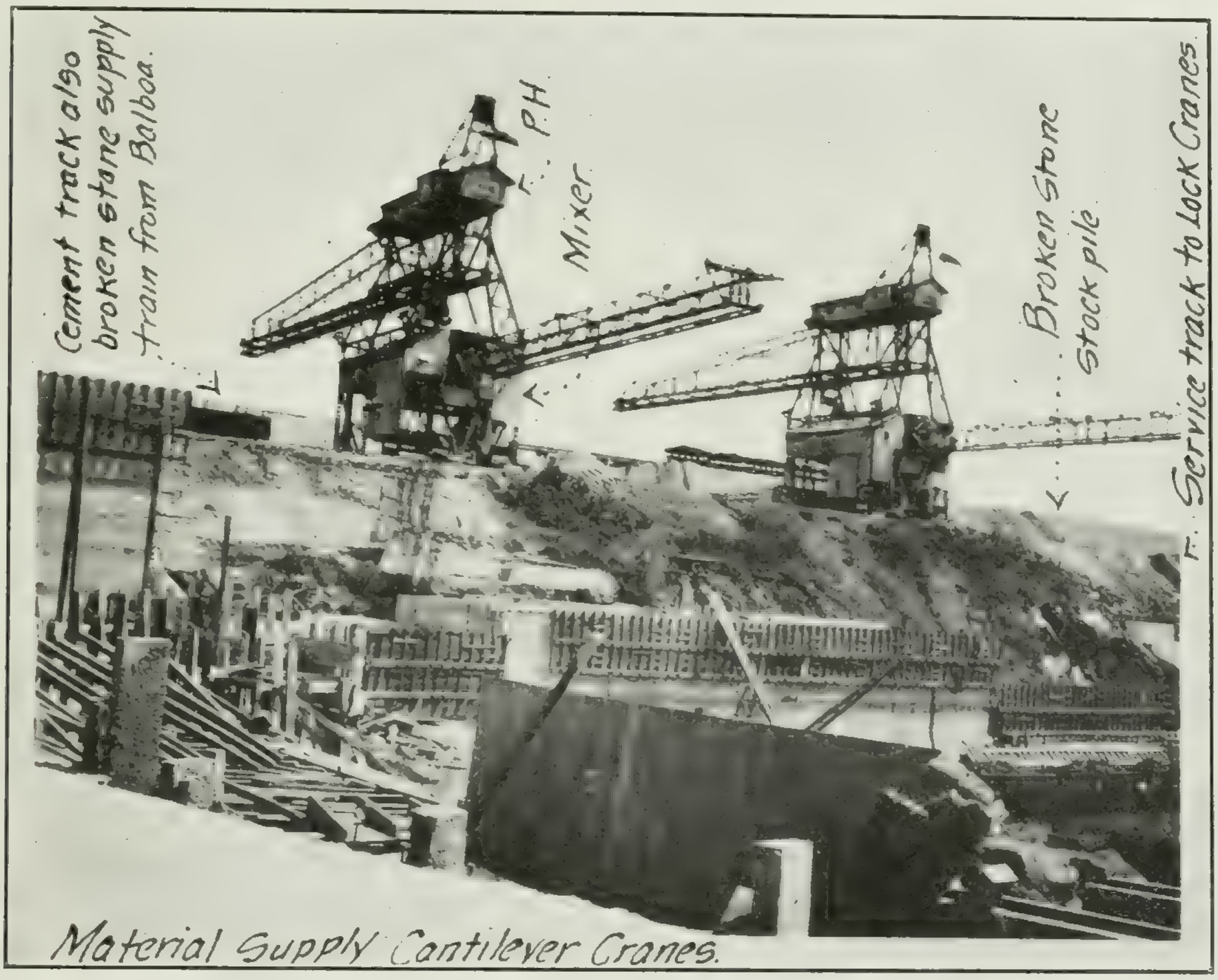
No. 96.—Miraflores locks. East wall assembling gate leaf. Temporary bridge for erecting upper gates at north end.



No. 97.—Pedro Miguel lock. Cantilever crane extending over stock piles.

crane. The storage piles of sand and stone will be located at the side of the outer lock walls, consequently one arm of the berm crane can be replaced by a swinging boom. This boom can be raised or lowered moving its outer end to a distance of 50 ft. At Miraflores all the concrete in the side walls can be placed by the boom of the berm cranes and the chamber cranes will be used to build the central wall.

In this plant it is proposed that the berm crane will supply stone and sand to but one mixer, although two can be used if necessary. The concrete will be discharged from the mixer into a 2 c. yd. bucket located on a swinging platform, which platform can be swung horizontally under the mixer spout. Upon getting its charge, the bucket will be swung from under the mixer spout and picked up by the boom trolley of the berm crane which will deposit it in the side walls of the lock. In the case of material for the central wall, the concrete from the berm crane bucket will be transferred to the chamber crane bucket by means of a transfer chute located on the side wall of the lock, The chamber cranes at Miraflores will be the same as at Pedro Miguel. The capacity of each of these cranes it is estimated will be about 100 c. yds. an hour.



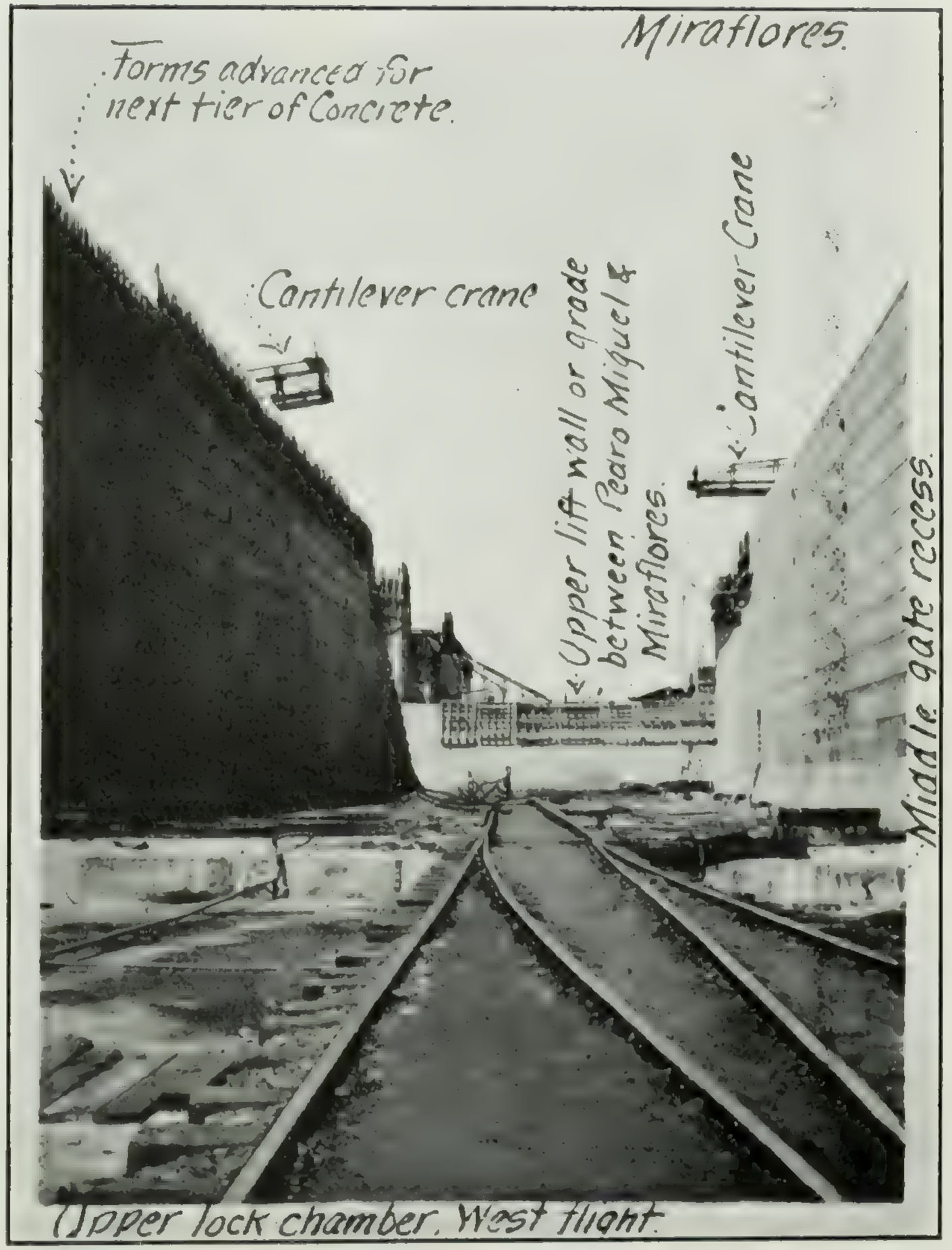
Material Supply Cantilever Cranes.

No. 98.—Miraflores locks. Bank cranes with depressable booms extending over lock wall.

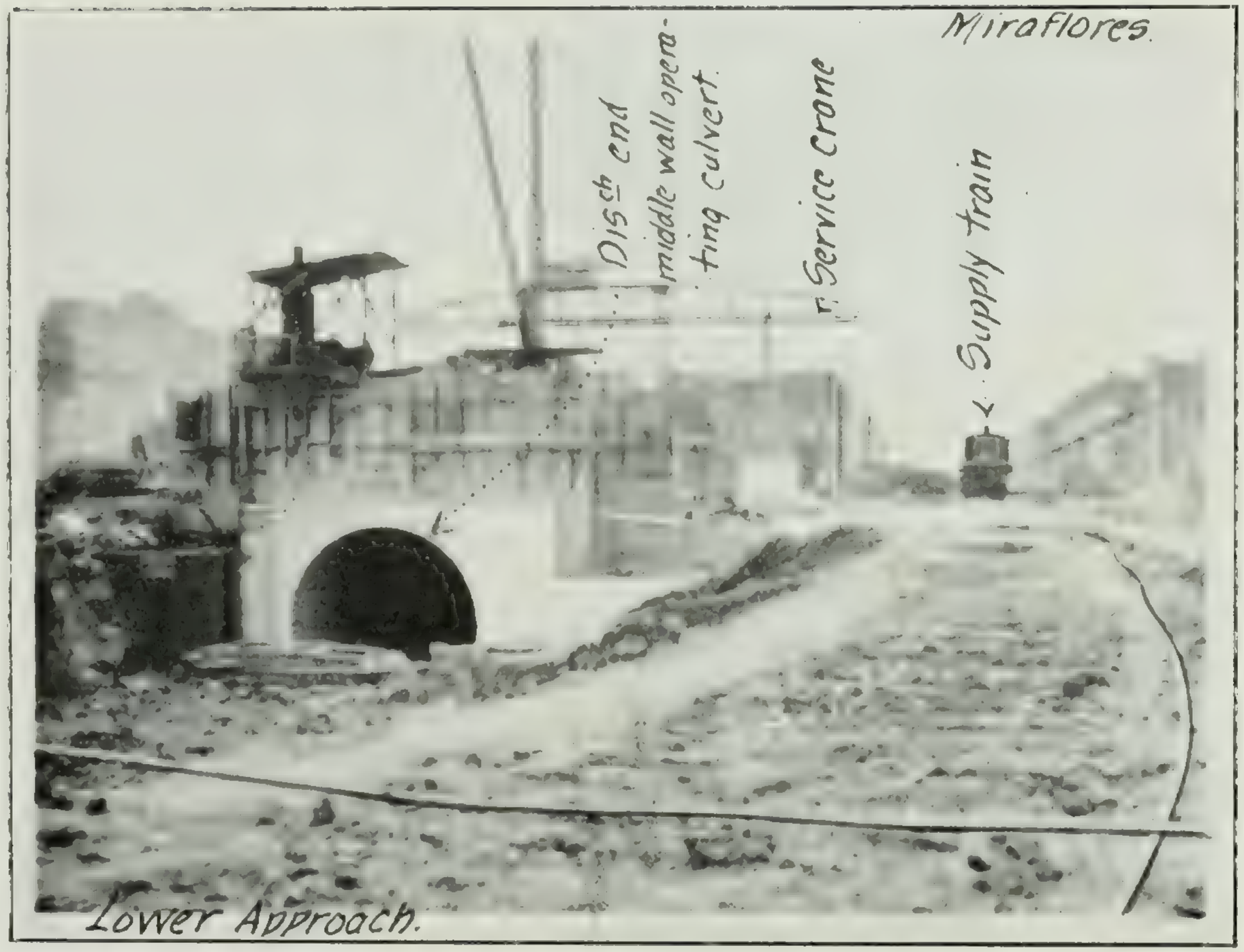
Above the Miraflores locks, the Cocoli river a tributary of the Rio Grande, is diverted toward the canal and impounded by a dam extending to the head of the locks from Cocoli hill almost parallel to the canal line. This dam is of earth, 2,300 ft. long and 40 ft. wide at elev. 70, the side slopes being 12 to 1. The ordinary head of water is 30 ft. and the maximum 40 ft.

To the side of the locks however, a concrete dam 500 ft. long is used with regulating sluices similar to and of the same dimensions as those at Gatun. The rest is elev. 39, and there are seven openings allowing 7,500 c.f.s. to pass.

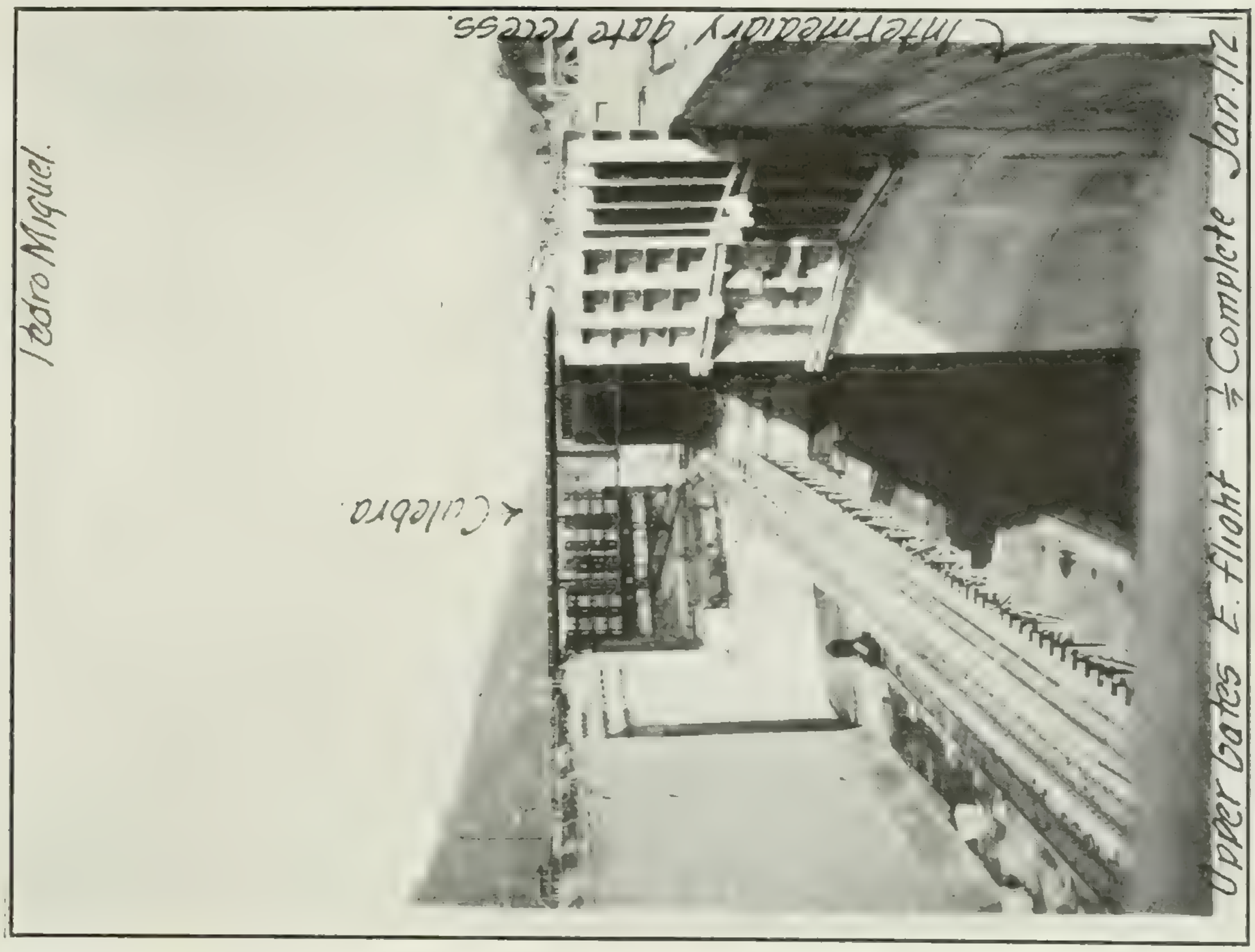
The first mile and a half of the channel below Miraflores locks leading out to the Pacific was a 15 ft. cut in rock, overlaid by 30 to 40 ft. of alluvial material.



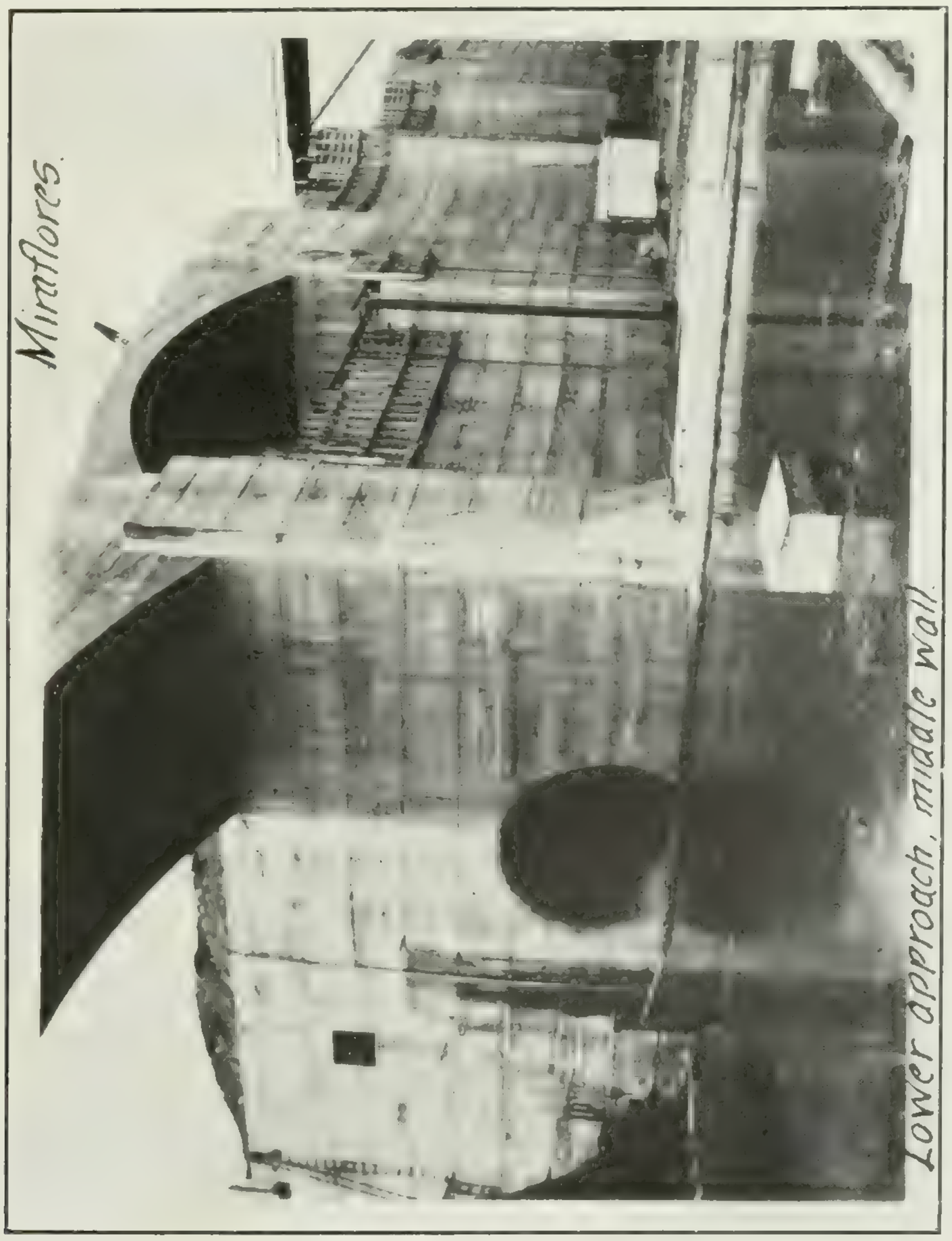
No. 99.—Miraflores locks. Upper lock construction arrangements. Wooden forms employed instead of steel as at Gatun. Forms were re-used several times and proved an elastic method.



No. 100.—Miraflores locks. Beginning construction lower lock. Cantilever crane and supply train in upper lock.



No. 101.—Pedro Miguel lock. Upper gates half erected. Double track service railways extending through all lock chambers.



No. 102.—Miraflores locks. Incline for towing locomotives from lower approach.

Hydraulic plants were used to remove the loam and incidentally reclaim 450 acres of swamp. Four hydraulic pumps force water through pipes, fitted with monitors, at 150 lbs. pressure. These jets dislodge and wash the loam into sump pits, whence it is pumped by 18″ centrifugal dredging pumps. These pumps are mounted upon barges built of reinforced concrete. Seaward of this, the excavation is done by the dredging plant further described.

The towing locomotives will surmount the rises between locks by a rack and pinion incline. Each one has a winch apparatus and can slack the tow line, climb the grade, set brakes and then wind in the line. The track rises from the approach to the lock upon concrete arches.

BALBOA DOCK.

As part of the terminal facilities at Balboa, a reinforced concrete dock, 706 ft. long by 55 ft. wide, is being built. The location of this work was such that by building a cofferdam and installing pumps, it was possible to carry out the work on dry land. When the pier is completed the water can be let in again and the necessary dredging done.

Borings taken on the site of the works showed the foundation material to be sand for about 20 ft. followed by a thick seam of heavy clay, then a few feet of sand and gravel on top of the bed rock, which is about from 60 to 70 ft. below sea level.

The dock consists of a double row of reinforced concrete piles, spaced from 25 to 35 feet apart, carrying a reinforced concrete floor. The piles are braced laterally 10 ft. below mean sea level by reinforced concrete beams. The shell of the piles is of 6 ft. inside diameter, 1 ft. thick, and built in 6 ft. sections. At first it was thought possible to mould them in the place they were to be sunk, by first forming the footing section. Inside this the men would excavate the material from below the section which would allow the footing to sink by its own weight. Then the forms were to be moved up and another section moulded. This was found inconvenient, because of the difficulty in handling the reinforcing metal and the space taken up by the forms, which hampered the movements of the workmen, so it was decided to mould the sections near the concrete mixer. By this method sections could be formed in advance, giving time for seasoning before being handled. As the footing section sinks down, a 6 ft. section is placed on top of it, and so on, until the footing is resting on bed rock and enough sections are on to bring the top of the pile to the desired elevation. When it becomes impossible for the men to work inside the pile, on account of the water, the excavation is carried on with an orange-peel bucket, the water making the material soft enough to handle in that way. When the footing section reaches bed-rock, it is embedded about a foot into it and a conical depression formed to allow the rock and concrete to get a good bond. The reinforcing metal is made continuous between sections by means of six vertical steel rods fitted with sleeve nuts. Besides this, eight old railway rails are placed vertically in pairs every 90 degrees against the inner face of the sections to reinforce against bending. The whole of this hollow pile is then filled with concrete.

The floor of the dock is made up of reinforced concrete girders running laterally and carrying at right angles (*i.e.*, lengthwise of dock), a system of floor beams. On top of these girders and beams is the reinforced concrete floor. The dock will be provided with a floating fender, which will bear against the piles.

The excavation at the Pacific end is being done by five dredges, of which three are French plant ladder dredges, built in Scotland. There is one 5 c. yd. dipper dredge, and one sea-going suction dredge. The whole floating plant is

under Mr. Robinson, who worked for the French company and overhauled the dredges and boats that had sunk in the marshes when work was suspended.

The rock under water is broken by drilling with well drills, with a drill scow, and a Lobnitz rock breaker is also in use. The well drills sink through the overlying earth by the use of pipe casing down to rock, then drilling as deep as required, after which the whole is sprung before final blasting. The drill scow is of the ordinary type, but has Dake hoisting engines. The rock breaker has a 20-ton ram and gives great satisfaction, the dredges having no difficulty in removing the loosened material.

Sand for concrete is taken out by ladder dredge and loaded into barges of 500 c. yds. capacity; these are unloaded by cranes into elevated bins, and finally delivered by gravity into the dump cars as required.

The annual report of 1911, together with complete detail drawings bound in book form, are forwarded herewith for record in the Department.

APPENDIX A.

Precautions to be observed in the Storage, Transportation, Handling and Use of Explosives.

Storage of Explosives.

Regulations in force—Panama Canal Works.

1.—Explosives will be stored in dry, well ventilated magazines, known respectively as storage magazines and service magazines, those of the former class being controlled and operated by the Quartermaster's Department, and of the latter class by the Division Engineers in the Department of Construction and Engineering. Storage magazines contain the reserve supply which is issued from time to time to the service magazines. From the latter is drawn the supply for daily use in the mining operations.

2.—Under no circumstances must blasting caps or electric fuses be stored in the same building with other explosives, nor during transportation must they be carried together.

3.—The grounds in the vicinity of all magazines will be kept free of weeds and grass, and in such condition as to avoid all danger of fire from sparks which may fall in the vicinity.

4.—In both storage and service magazines the boxes containing explosives shall be turned once every two weeks, care being taken to so arrange the boxes that the lettering on all boxes shall be erect at one turning and inverted on the next turning. A record shall be kept in each magazine showing the dates on which the boxes were turned.

5.—There shall be kept in each magazine a thermometer of standard rating, which shall be so located as to show about the average temperature of the magazine at any one time, and which shall be read during the hottest part of the day at least two days in every week, and a record of the dates and readings shall be kept permanently posted in each magazine, and a copy of same furnished monthly by each Division Engineer to the Chairman and Chief Engineer, Isthmian Canal Commission.

6.—The firing of any pistol, rifle or shotgun in the general vicinity of any magazine is strictly prohibited, and watchmen will report to the Division Engineer all persons guilty of violation of this rule.

7.—All employees engaged in working in storage service or exploder magazines must, while so engaged, wear shoes or slippers with hemp, felt or straw soles,

which will be provided for this purpose by the various Division Engineers, and habitually kept, when not in use, in the magazine.

8.—Smoking and the carrying and use of matches within or in the near vicinity of all magazines is strictly forbidden, and the same prohibition will be rigidly enforced in the case of all persons engaged in transporting, handling or using explosives or detonators.

Transporting Explosives.

1.—In the distribution of explosives from the storage magazines to the service magazines it is desirable, whenever practicable, to use the same crews, in order that the personnel can be properly instructed in their duties.

2.—In transporting explosives from the storage magazines to the service magazines covered cars will always be used, and every precaution taken to reduce the risk of explosion from sparks and cinders.

Handling and Use of Explosives.

1.—Every precaution must be taken during loading operations to avoid accidental explosions, due to falling sparks and cinders from locomotives and steam shovels, and under no circumstances must explosives or detonators be allowed to lie uncovered and exposed to this danger.

2.—Explosives and detonators must not be carried, or placed together, before being used.

3.—Dynamite from the service magazines, and not needed for immediate use, will be kept in locked wooden boxes, which shall be painted red, and shall be placed in such positions as to minimize the risk from train wrecks and falling débris.

4.—Primers, after being made up, should be kept in a portable metal box with a hinged cover, painted red, and should not be stored close to the dynamite even while loading holes.

5.—In preparing primers care should be observed not to apply violence to the filling where the wires enter the cap, or in forcibly separating the two wires, since the waterproof qualities of the exploder depend in a great measure on keeping this portion intact.

6.—Under no circumstances shall dynamite cartridges be kept in tool boxes, nor must dynamite be left over night or holidays, except under lock and key.

7.—Employees are prohibited from attempting to remove blasting caps from boxes by inserting wire nails or any sharp instruments: from carrying detonators in their pockets, from tapping or otherwise investigating a detonator; from withdrawing a wire from an electric fuse, or from attempting to tighten a cap around fuse by biting it with the teeth.

8.—Holes must not be loaded immediately after springing, and in cases where there is any doubt as to the temperature of the holes, some metal object like a chain, rod or pipe should be allowed to remain in the hole for twelve to fifteen minutes. Upon withdrawing this metal object from the hole and carefully feeling it thoroughout its entire length, it can readily be determined whether or not the temperature at any point is unduly high.

9.—Maximum thermometers may also be used, but they possess the disadvantage of showing the temperature only in the particular place to which they are lowered.

10.—Tamping must never be done with iron or steel bars or tools or tripod rammers. Use should be made only of pine or fir rods and under no circumstances must a primer be forced into a hole.

11.—The explosive must not be rammed forcibly, but must be pressed gently and firmly into place.

12.—Holes must not be fired without ample warning, and until everyone is beyond the danger zone, or protected from falling debris. Any supply of explosives in the vicinity must also be protected from danger from this source.

13.—Employees engaged in making up primers must be located at a safe distance from working parties and from equipment.

14.—Powder foremen must exercise every care to see that every piece of paper or other inflammable material is removed from the vicinity of the locality where dynamite is placed during loading operations.

15.—Undue haste must not be used in seeking the cause of a misfire, and ample time must be allowed before the misfire is approached. When a shot has missed fire no attempt must be made to drill, bore, or pick out the shot, but the situation must be met by drilling and charging another hole not less than three feet from the missed hole.

16.—Blasting machines should be inspected periodically by a competent electrical engineer for the purpose of ascertaining their ability to fire an exploder through a given resistance.

17.—Not more than twelve holes must be fired by a blasting machine at one time, and these holes must always be wired in series.

18. Before being placed in the primers, each electric fuse must be tested by the small detector galvanometer.

19.—At places where a live wire adjacent to the cut is available ,and where more than twelve holes are to be fired at a time, the live wire must always be used.

20.—Not more than fifty holes must be fired at one time by the use of the live wire, and these holes must always be wired in series parallel under the supervision of a competent blasting wireman.

21.—Every powderman will be provided with a small detector galvanometer with which he shall see that every fuse, which is to be placed in a loaded hole, is tested before the primer is made up. Each hole after being loaded, will also be tested with this galvanometer, and the entire series of holes to be fired at one shot will be tested in like manner, after the wiring is completed and just before the holes are fired, care being taken when the galvanometer test is made to see that no working parties or unauthorized persons are within the danger limit.

22.—Every Superintendent and Assistant Superintendent of Construction, every general foreman and every powder man will be furnished with a copy of these instructions of suitable size to be carried in the pocket, and must familiarize himself perfectly with the precautions to be observed in reference to the transportation, handling and use of explosives on his work.

23.—Any disregard, or infraction of these rules will result in the immediate dismissal of the responsible party.

APPENDIX B.

Extracts from the Annual Report of the Isthmian Canal Commission.

(From Engineering News.)

Culebra, Canal Zone, Sept. 10, 1912.

The first division of the office of the chief engineer, under Col. H. F. Hodges, U.S.A., assistant chief engineer, continued in charge of the design of the locks, dams, regulating works, and accessories; the design and construction of aids to navigation : the inspection of the manufacture and erection, under contract or otherwise, of the lock gates, operating machinery, gates and valves, emergency dams and fender chains, and of the placing of such concrete in the locks as was omitted until the installation of the machinery.

Tests of valves for the locks.—To determine the probable leakage around the rising stem valves, also the force required to start the valve and to maintain the motion, a test was made on a set of two valves which were installed in the upper valve chamber of the west-side culvert at Gatun. The entrance to the culvert was closed by a water-tight bulkhead, and the culvert between the bulkhead and the valves, with the well above the valves to the top of the wall, was filled with water. By this arrangement there was a greater head against the valves than will obtain when the lock is pumped dry for examination, and considerably greater than the usual operating head.

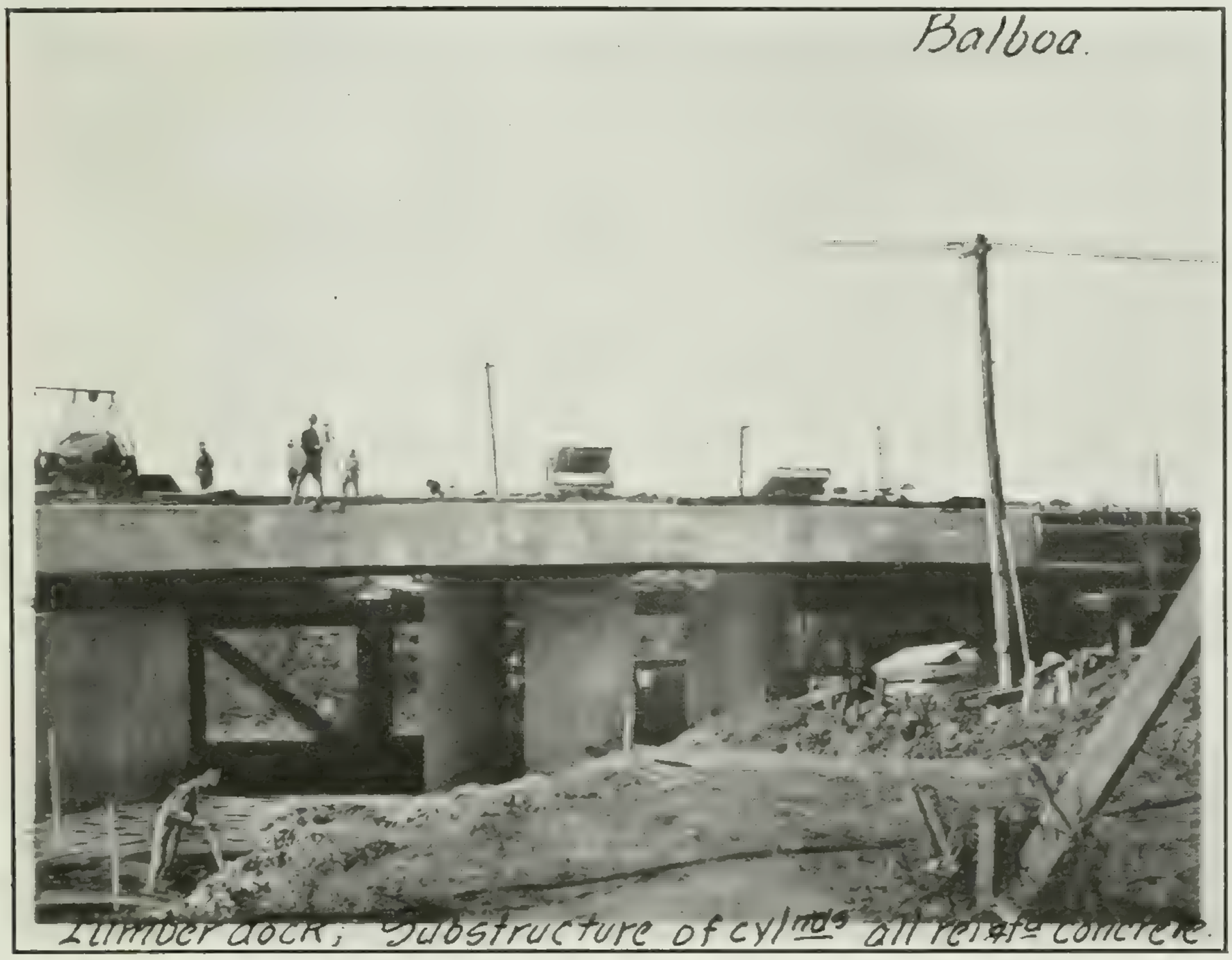
Under a 79-ft. head that resulted, the combined leakage of both valves was 1.82 c. ft. per sec., while the combined friction resulting from the contact of the side seals of the gate, as well as the action of the roller trains, averaged 21,170 lbs. for each valve. It had been assumed at 31,750 lbs. in the design of the machinery, which was intended to exert a lifting force of 60,000 lb., including all friction and the weight of the valve and its accessories. It is probable that both the friction and the leakage will be reduced in subsequent valves, as certain improvements in detail and workmanship are found in those of later construction.

One of the cylindrical valves in the locks at Gatun was tested for leakage from the exterior by constructing a bulkhead across the entrance to the valve chamber, which was then filled with water. When the head reached 60 ft. the leakage was found to vary from a quantity too small to measure to about 0.25 c. ft. per sec. The average was about what was to be expected from the tests made at Pedro Miguel and described in the last annual report.

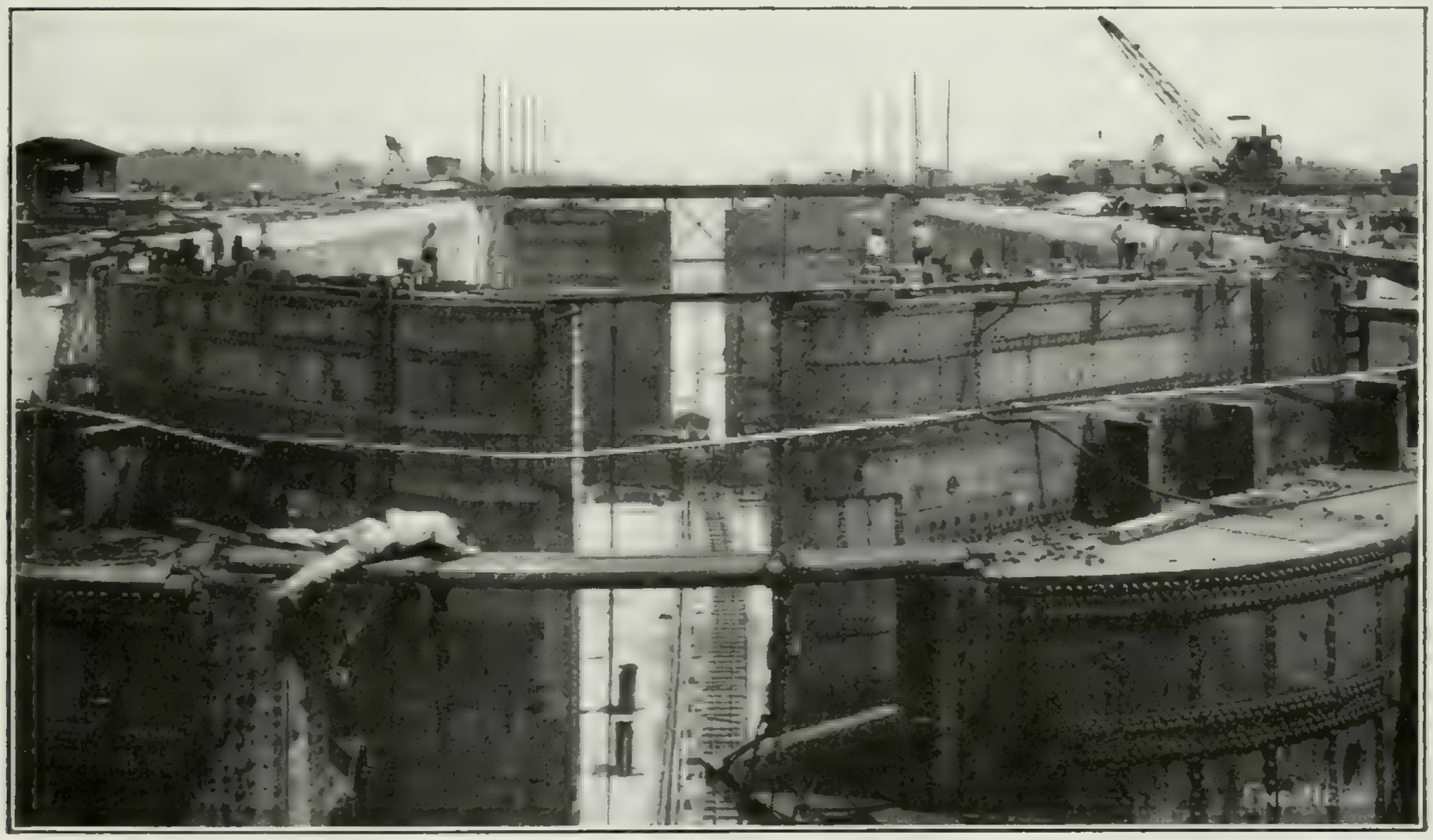
Tests of electric motor insulation.—Owing to the peculiar climatic conditions on the isthmus, involving tropical heat and extreme humidity, and the deteriorating effect of these conditions on the insulation of electrical machinery, it was necessary to investigate thoroughly the different kinds of insulation available for use on the lock machinery.

To accomplish this, 16 sample motors in all were purchased, two from each company offering bids for the motors required. Eight of these were sent to the machine contractors for operating tests on the valve machines, and the other eight were shipped direct to the Isthmus, where they were subjected to the extreme conditions specified in the specifications accompanying the invitation for bids, in order to test the insulation.

They were placed first in a storehouse at Gatun and exposed to the ordinary conditions of climate for a period of about two months, during which time the condition of the insulation was determined periodically by inspection and tests In order to expedite the action of the heat and humidity they were subjected to a steam test, in which the extremes of temperature and humidity mentioned might be reproduced. In order that the conditions of all motors might be identical



No. 103.—Balboa dock. Reinforced concrete deck on concrete cylinders, extending 60 ft. down to rock.



No. 104.—Steel lock gate erection, Gatun.
(Kind permission Engineering News).

in all respects, the motors were placed in a small building erected for the purpose and the tests performed on all motors simultaneously, so that the motors were subjected to the same humidity and temperature for the same length of time.

Briefly, the tests consisted of filling the building in which the motors were located with steam, thereby maintaining a temperature of 50° C. for a period of 10 days, making potential tests and measurements of insulation throughout this period. In addition to the steam test, the motors which survived were immersed by filling the case with water at a temperature of approximately 30° C. and maintaining this condition for about 5 hours during which time observations of insulation resistance were made continuously. The eight motors which were first shipped to the machine contractors were, after reaching the Isthmus, subjected to the immersion test but not the steam test. The tests were conducted without the presence of any representative of the manufacturers.

The relative standing of the various types of insulation in these tests was, in general, definite and the choice of the most suitable insulation was clear; however, in view of the number of motors tested, it was desirable to obtain a numerical basis of comparison. A schedule of the various stages of the tests was, therefore, prepared and a number of points assigned for the survival of each of these stages. The motors were given four points for surviving the test; three if, after failure during the test, the insulation recovered without repair; two if, after such failure, the insulation was found possible of repair; one if, after repair, the motors recovered; and none if they failed to recover at all. The total points for each of the four motors representing the manufacturer in the entire series of tests then served as an index from which the relative value of the insulation could be determined. The contract was awarded on the basis of the tests as above outlined.

Progress on the lock gates.—The lock gates are being constructed and erected under contract dated June 21, 1910. The total steel plates and shapes accepted at the mills to the end of the fiscal year aggregated about 52,322 tons, which practically comprised all the rolled material required, excepting that for the spare parts. About three-quarters of all the castings were made, machined, and accepted. The only change in the material for any part of the gates was made in the bushings for the pintles at the bottom of certain leaves that will always be in sea water. In order to avoid possible damage through electrolytic action, these bushings will be made of hard-cast vanadium steel instead of the manganese bronze used in the other gates. Certain of the other leaves which will be operated in brackish water are to be protected from erosion by the use of zinc rings placed close to the bronze bushings.

The total shipment of structural material to the end of the fiscal year, 1912 aggregated about 39,000 tons, or 76% of the amount required for all the gates. Of the above total, about 32,000 tons were shipped during the fiscal year, so that on June 30, 1912, a total of 13,000 tons remained to be forwarded, comprising about half the material for the gates in the intermediate locks at Gatun and the upper locks at Miraflores and all the material for the gates in the lower lock at Miraflores. At this rate of progress the steel work for all the lock gates and the spare parts provided for in the contract will be completed in the shops before Nov. 1, 1912.

On June 30, 1912 the work of erecting the gates on the Isthmus was in progress on 23 pairs of gates, or exactly half of the total number on the canal, but these gates were in various stages, and none of them was entirely completed. They comprised all the gates in the upper lock and the intermediate gates in the lower lock at Gatun and all the gates at Pedro Miguel excepting the lower guard gate in the west chamber. No material was placed at Miraflores. The total steel in place in the several gates at the end of the fiscal year amounted to 19,631 tons, or about 34%. With the exception of 412 tons previously reported, all of this

material was erected during the fiscal year. The total number of field rivets driven to June 30, 1912 —practically all of them during the fiscal year—was 963,500 out of 5,750,000, or only 17% of the total.

The completion of the several gates has fallen considerably behind the dates specified in the contract, due in part to the failure of the contractors to deliver the necessary material and tools on time, and in part to the limited number—and in some cases to the poor quality—of mechanics and labourers. This has been the case especially in the field riveting and the machine work necessary for the erection of the gates. A close and continuous inspection was maintained, and it is believed that the completed gates will meet fully the standard laid down in the specifications. The tests for water-tightness made in the first gate at Gatun indicate excellent workmanship in this respect.

Tests of gate operation.—Contracts were entered into toward the end of the previous fiscal year for the first two mitre gate moving machines and for the first mitre forcing machine. The mitre gate moving machines were installed in their respective places, and one tested in regular service of swinging a gate in the dry. The operation was successfully performed in 1 min., and 48 sec., or 12 sec. less than the estimated time. As the tests were satisfactory, the contract for the remaining 90 mitre gate-moving machines was made on Feb. 11, 1912.

Towing machinery.—The electric-towing locomotives were described in the annual report of 1910. Bids for these machines were invited, and the same policy was followed as in the case of other machines of asking the price for one and also on the remainder if the sample proves satisfactory. A contract was entered into for the delivery of one locomotive complete, with the option of purchasing the other 39 that will be required. Under the contracts for materials in connection with the locomotive track, 95% of the structural parts was completed during the year.

Electric power station.—Specifications were issued Sept. 9, 1911, covering the main generating equipment for a hydro electric station, containing three 2,000-kw. units, to be located adjacent to the spillway in Gatun Dam. The equipment is to consist of three 2,250-kw. water turbines, three head gates, three penstocks, three governors, three draught tubes, three 2,000-kw. generators, three direct-connected 50-kw. exciters, two 100-kw. motor-driven exciter sets, one 30-ton electric crane, and one lubricating system.

The average head throughout the year will be approximately 75 ft., the elevation of the tail race being about 8 ft. above sea level. During the dry season it will be necessary to draw upon the storage in Gat in Lake. The maximum quantity of water diverted for hydro-electric development is approximately 7% of the minimum water supply and is the excess which is not required for lockages, evaporation and leakage.

Lighting the locks.—The general features of lock illumination, both exterior and interior, were fixed during the year. For exterior lighting concrete lamp standards will be erected on the coping of the locks approximately 100 ft. apart throughout the entire length of each wall. In all there will be 211 lamp standards at Gatun, 131 at Pedro Miguel, and 169 at Miraflores, a total of 511. The standard is of special design and supports a reflector about 30 ft. above the coping level. The reflector is intended to throw the light of a 400-watt Tungsten lamp outward over a ship in the lock chamber and also to produce a uniform illumination over the surface of the wall, without the glare occasioned by the brilliancy of the lamp shining directly into the eyes of an approaching pilot. For use at night, or when repairing machinery in the various subways, artificial illumination is provided by the ordinary 16-c. p. carbon filament lamps mounted in specially designed reflectors set in the concrete of the ceiling and walls. A total of about 7,000 lamps will be installed in all the locks.

Sailing through the canal at night.—To enable a pilot to keep his course up to the turning point it is necessary to have a range of two lights at each end of the longer tangents in prolongation of the sailing line. The prolongations of these tangents on which the lights are situated were covered by heavy growths of brush and timber, so that trocas had to be cut through the jungle until suitable locations were found. These trocas are the width of the canal at the beginning and narrow down to 480 ft. at the end.

Field forces were organized and construction work begun on the range towers at the Pacific entrance Sept. 1, 1911. The towers, which are of concrete, are being constructed by means of steel forms, which are designed for the three types of towers used in the Atlantic and Pacific sections. The forms are 4 ft. in height and of such size as to be easily handled by two labourers. They are made in segmental sections or staves, and when the form is shifted to a higher position the desired taper is given by omitting a section entirely or substituting a narrower one. One set of forms answers for all towers of the type used in the sea-level sections and another set for all towers of Gatun Lake. The forms for the watch room and lantern room are set up and filled when the body of the tower has been finished. Eleven of the towers required by the system have been completed to date.

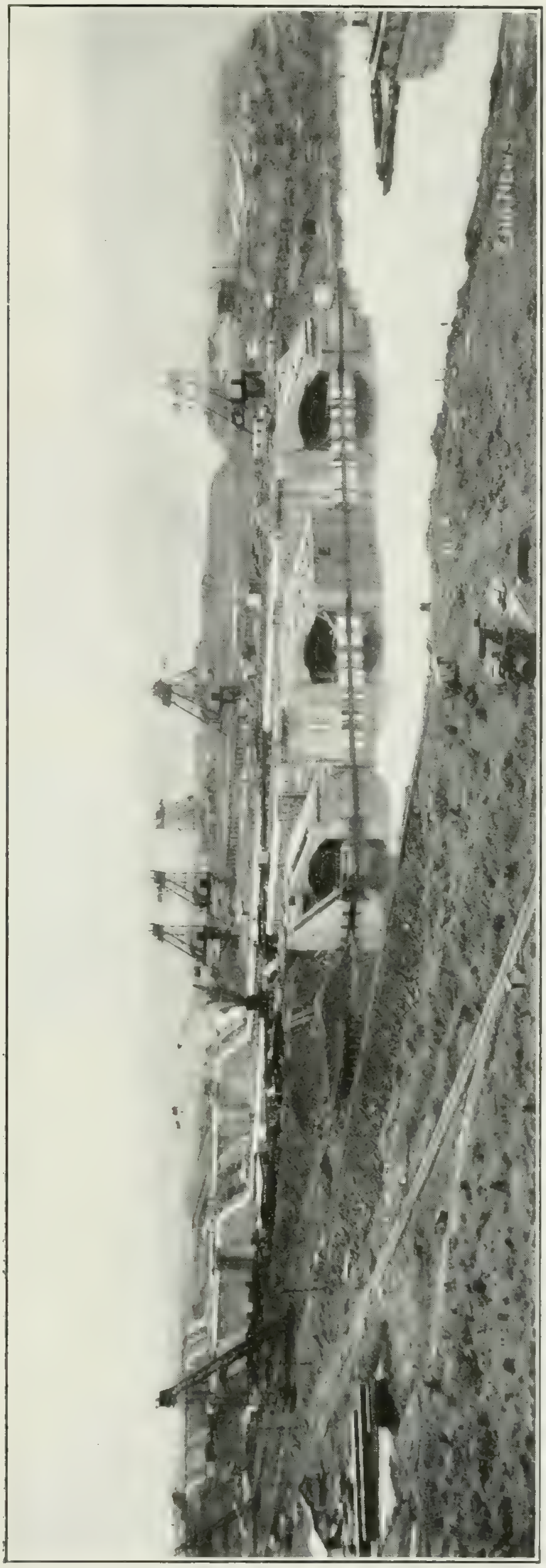
The position of 60 gas buoys was located, referenced and checked ,and three beacons in the Gatun Lake section located. The illuminants will be gas and electricity, the latter wherever the light is sufficiently accessible. For the floating buoys and for the 23 towers and beacons which are at inaccessible places, compressed acetylene, dissolved in acetone, has been adopted. White lights will be used throughout, and, in order to eliminate the possibility of conflicting the lights with one another and with the lights on shore, all range lights, beacons, and buoys will have individual characteristics formed by flashes and combinations of flashes of light and dark intervals.

ATLANTIC DIVISION.

This work is in charge of Lieut.-Col. William L. Sibert, U.S.A., as division engineer.

At the close of the previous fiscal year the excavation necessary for the construction of so much of the Gatun Locks as lie above the lower caisson sills was completed, with the exception of the excavation for the lateral culverts in the lowest lock. This was completed during the fiscal year just ended, at a cost of $2·9598 per c. yd. The material to be excavated in order to permit the construction of the portions of the locks including the wing walls and approach pier at the north end consists, for the most part, of mud too soft to support steam shovels, as the water cannot be entirely excluded, so that recourse must be had to dredging. It is estimated that 89,570 c. yds. will complete the excavation necessary to permit unwatering of the area, so that the construc-. tion of the wing walls and north centre approach pier can be begun. In order to secure suitable foundations, it was necessary to excavate in places to a depth of 70 ft. below sea level, which required closing the opening through which the dredges were admitted by an earth dam and lowering the water so that the dredges could work to this depth.

The total amount of masonry—concrete and large stone—laid by the concrete plant, auxiliary plant, portable mixers, and by hand aggregated for the year 451,025 c. yds.; of this amount, 59,883 c. yds. were reinforced. Of this total, 371,388 c. yds. were laid during the time the 12 -hr. day was used, so that only 79,637 c. yds. were laid since Jan. 31, 1912. The division cost of the masonry was $7·7552 per cu. yd. The large stone laid in the concrete, aggregating 14,194 cub. yd., cost $1·3283 per c. yd. delivered in the concrete,



No. 105.—Gatun Locks, temporary concrete dam at entrances, June 1912.
(Kind permission Engineering News.)

resulting in a saving of $49,300. The total amount of concrete laid in the locks to the close of the fiscal year was 1,875,965 cu. yd., at an average cost of $7.1142 per c. yd. On the basis of 2,000,000 c. yds., the masonry work of the Gatun locks was 93·8% completed.

Crushed stone for the concrete of the locks and spillway was obtained from the Porto Bello quarry until Apr. 30, 1912, when the crusher plant was shut down. The total amount produced up to the time that the quarry was shut down aggregated 440,413 cu. yd., at an average cost of $1.4280 per c. yd. The output of the crushers averaged 217.60 cu. yd. per hour in service and 436.56 c. yds. per hour crushing. The material was transported to Gatun in barges, thence transferred to the stock piles. The cost delivered in the stock piles at Gatun averaged $2.4952 per c. yd.



No. 106.—Down-stream face of Gatun dam spillway, June, 1912.
(Kind permission Engineering News.)

Sand was obtained from Nombre de Dios by use of dredge 'No. 4' until Nov. 17, 1911, when the sand storage pile at Gatun was filled, the work was closed down, and the plant removed, The operations of other departments at this locality also ceased. The total amount secured from July 1, 1911; to this date, 144,123 c. yds. was transported in barges at Gatun. The cost per c. yd. in the stock pile was $2·2414.

Work on Gatun Dam.—The cross-sections of Gatun Dam taken in June, 1912, show that during the fiscal year the dry fill was increased by 2,544,526 cu. yds. and the hydraulic fill by 2,543,086 c. yd. In obtaining this amount of 5,087,612 c. yd. of net fill, 9,048,896 c. yds. of material (borrow-pit measurement) were handled: in other words, there was a loss of 43.8%. The dry fill in place in the dam shows a loss of 15.53% resulting from consolidation in the mass of the dry fill and from its intermixture with the hydraulic material. The wet fill, measured in place, shows that a loss of 56% resulted, due mainly to waste of soft material in suspension through the drain pipes, leakage from the pipes, and general consolidation.

The cost per cubic yd. of dry fill averaged $0·5174 and for wet fill $0.3844 per cu. yd., on the basis of material handled; on the basis of actual increase in the dam, these costs were $0.5303 and $0·3938, respectively.

The hydraulic fill was pumped into the dam by five pipe-line dredges working in borrow pits upward of one and a half miles distant, the maximum lift of the material being 100 ft. For the longer pipe lines and higher lifts, one or two relay pumps were installed to assist the dredges.

The original plan of the dam, given in the report of the Board of Consulting Engineers for the Panama Canal, dated Feb. 5, 1906, contemplated a width of 100 ft. at a height of 135 ft. above sea level, with side slopes on the upstream side of 1 in 3 to elevation 90 and then to 1 in 2 to elevation 135. On the downstream face the slopes, starting at the top ,were to be 1 in 2 down to elevation 88, then 1 in 25 to elevation 20, 1 in 50 for the next 10 ft. in elevation, terminating with a slope of 1 in 2 to sea level.

During 1908 difficulty was experienced with one of the Panama R.R. embankments on the relocation south of Gatun, which necessitated spreading the lower courses of the fill. In this case the slope of the line joining the top of the completed embankment with the bottom edge of the bench which was constructed to spread the foundation over the relatively soft area was between 1 on 7 and 1 on 8. Assuming this for the slope of the dam, the division engineer prepared a plan of cross-section in January, 1909, in which the upstream slope from elevation 60 was fixed at 1 on 7·67 to elevation 105, where the width was 100 ft., and the downstream slope was 1 on 11·63, continuing to elevation 30.

In 1909, when the board of engineers appointed by the President visited the Isthmus with the President elect, for the purpose of reviewing the project to determine whether any change should be made as the result of the slip which had occurred in the rock fill on the south toe of the dam, the proposition of reducing the height of the dam and flattening the slopes was submitted to it. The board's report was accompanied by a typical cross-section of the dam which it advocated and which was adopted. The height of the dam had been reduced 20 ft., or from elevation 135 ft., to elevation 115 ft. The slopes on the upstream side are 1 on 7·67 to elevation 90, with a horizontal berm 30 ft. wide at elevation 60, and then 1 on 4 to the full height, or 115 ft.

On the downstream side. slopes from the top down were fixed at 1 on 4 to elevation 90, thence 1 on 8 to elevation 60, from which to elevation 30, 1 on 16 was adopted. Below elevation 30, where a berm was provided, the slope was 1 on 8 to sea level.

According to this cross-section, which will be found in the annual report, of 1909, the hydraulic fill was to extend to elevation 100, where it was to be 100 ft. wide and topped by 15 ft., of rock fill. On the upstream side the hydraulic fill was to have a slope of 1 on 2, and in the interval between this fill and a 10-ft. thickness of rock on the outer slope of the dam was to be the ' cheapest filling available.' On the downstream side the hydraulic fill had a slope of 1 on 2 down to elevation 55, and thence to sea level on a slope about parallel to the slope of the dam, the interval between the fill and the exterior slope of the dam to be of the 'cheapest filling available, rock fill preferred for surface of slopes.'

The construction of the dam proceeded in accord with these recommendations, except that for construction purposes authority was given to continue the practically 1 on 8 slopes on upward, the change of slopes to be made later. The cheapest filling available was that supplied by the dredges, and it was evident that if this did not dry out properly a condition might arise which would result in producing such a head against the dry fill that a blowout might occur. Accordingly in November, 1909, instructions were given to increase the quantity of dry fill on both the upstream and downstream sides, encroaching if necessary into the hydraulic fill, so as to secure outside of the latter, masses such that any hydrostatic pressure that might be produced by the hydraulic fill would tend to act downward on the exterior masses instead of upward and outward. The drying out that has been tried in the dry season of 1910-11 showed an unsatis-

factory condition regarding the consolidation of at least the central portion of the hydraulic fill in that part of the dam east of the spillway, but it was believed that if construction proceeded along the lines of the instructions given the soft material would be squeezed out as the height of the dam increased.

In order to determine the settlement that was taking place in the dam, observations were required on hubs located as described in the last annual report and a monthly record kept. These observations showed a gradual settlement until on Oct. 12, 1911, a movement occurred in the east half of the dam. On the north side, for a length of approximately 1,000 feet, the top of the dry fill settled 4 or 5 ft. This vertical movement was accompanied by a horizontal movement, greatest at the 75 ft. contour, where it amounted to 1·42 ft. and gradually diminishing down the slope to the 31 ft. contour, where the horizontal displacement was about 3.2 ft. in a length of about 700 ft. While the crest of the slope moved downward, the lower portions of the slope were bulged upwards to a certain extent, measurements showing a rise of 1·25 ft. on the 60 ft. contour at a point 1,150 ft. from the centre of the spillway channel.

The movement was within the dam, as was verified by a test pit sunk where the bulging was greatest, which also showed that the masses of dry fill desired had not been secured. Material was piled to the north of the 31 ft. contour, giving additional weight to the toe, and a blanket of spoil sufficient to make a continuous slope from the 31 ft. berm to the top of the dam was placed over the north face. There was no motion after this additional weight had been added other than the gradual settlement.

In addition to these steps, instructions were issued to pump sand into the hydraulic fill along the 1,000 ft. length where the settlement occurred at the top, and to bring the dry fill up on the regular slopes, gradually crowding the hydraulic fill until the distance between the dry fills on the two sides was 25 ft., after which the hydraulic fill was to be covered with red clay secured from the vicinity and properly tamped wet until a height of 103·35 ft. was reached, where the thickness would be 100 ft. It is proposed to continue observations and ultimately to bring the dam to 105 ft. above sea level and, if necessary, subsequently to raise it to the height originally advocated.

A movement occurred about the same time on the south slope, the greatest lateral motion being 6·5 ft. on the 75 ft. contour. On the 60 ft., berm there was a lateral movement of 0·5 ft. A heavy toe was added on the 60 ft. level, extending from the dam to the spillway channel wall and to the berm.

In adapting the cross section proposed by the board in 1909 to the ground, the slopes were modified where the dam is practically a blanket over the spur projecting from the hills on the west side against which the dam abuts, and here the plan proposed of making the upstream slope 1 on 4 and the downstream slope 1 on 5 was approved. As dry fill was added to the upstream face of the hill a condition developed indicating that the material on the bottom extending out from the foot of the hill would not bear the weight, so that it was necessary to flatten the slope, which was accordingly authorized to be 1 on 7·67. A heavy fill was placed on the ridge that was pushed up outside of the toe of the slope, and, in addition, one of the dredges operating to the south of the dam extended the foundation outside of the rock fill by distributing material over the bottom, thus adding to the spread given the foundations.

In the channel between Gatun locks and the Atlantic Ocean, excavation in the dry was continued through the Mindi Hills and, with the exception of the dike separating the cut from the French canal, was completed on Feb. 24, 1912.

The dredges which operated between the Mindi Hills and deep water in the Caribbean in excavating from the canal prism were the seagoing dredge ' Caribbean,' 5 yd. dipper dredges ' Chagres ' and ' Mindi,' and the French ladder dredges 'No. 1' and 'No. 5.' They removed 3,859,445 c. yds. of earth

and 495,595 c. yds. of rock. Channel silting during the year amounted to 3,036,000 c. yds., making the net earth excavation in this section 823,445 c. yds.

Central Division.

The work of the division embraces all the excavation between the Gatun dam and Pedro Miguel Locks. The work is in charge of Lieut. Col. D. C. Gaillard, U. S. A., as division engineer.

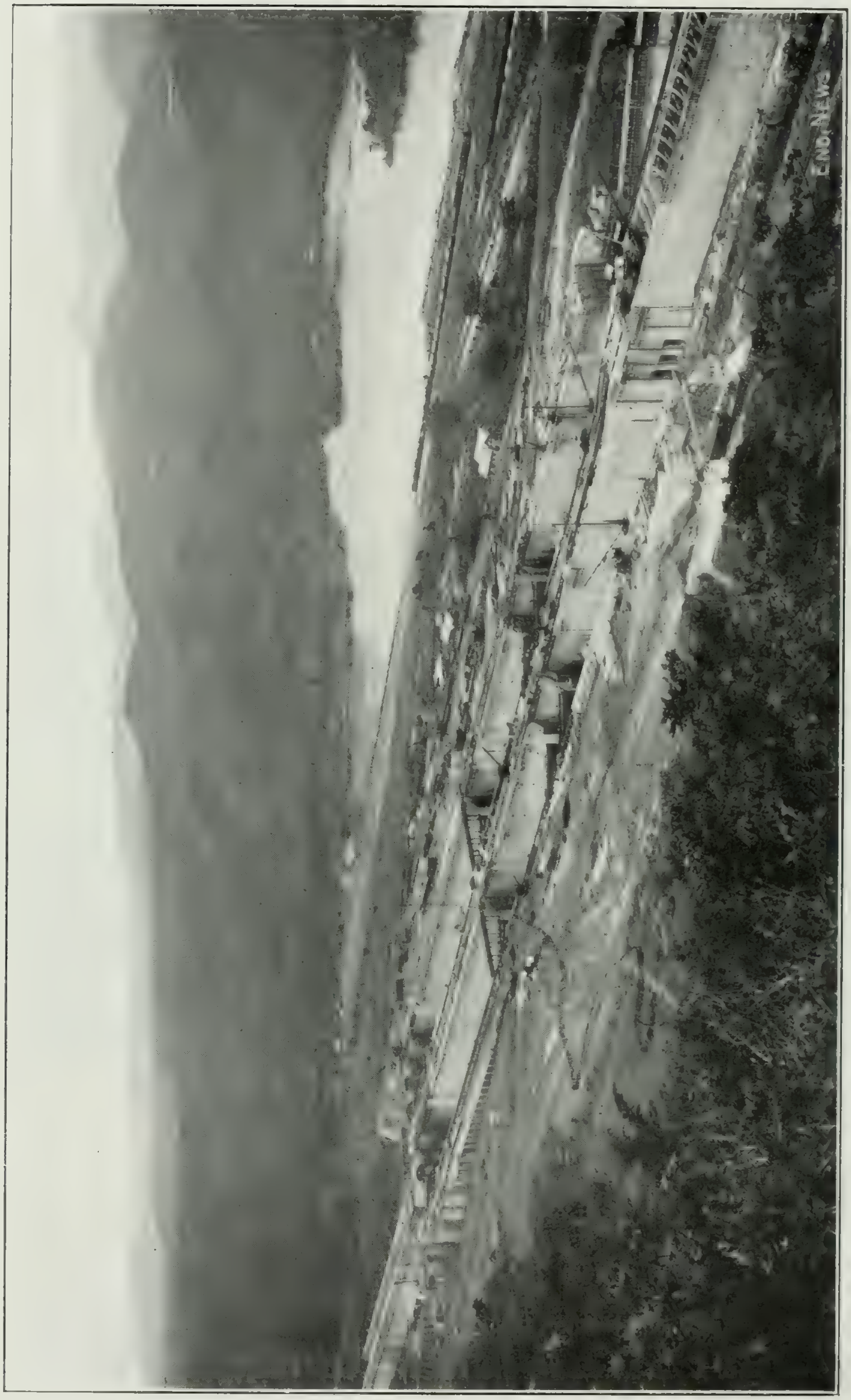
The total amount removed from the Chagres during the year aggregated 560,509 c. yds., leaving 151,000 c. yds. of wet excavation still remaining.

During the fiscal year 16,476,769 c. yds. of material were removed from the Culebra Cut and, from estimates prepared on July 1, 1912, 11,863,540 c. yds. remained to be removed in order to complete this section of the canal. The amount remaining was again increased over that reported a year ago by 3,590,000 c. yds., in order to allow for slides already existing at the beginning of the fiscal year and for excavation along the upper levels of the banks of the canal, where slides had developed or were anticipated, and outside of the canal prism lines.

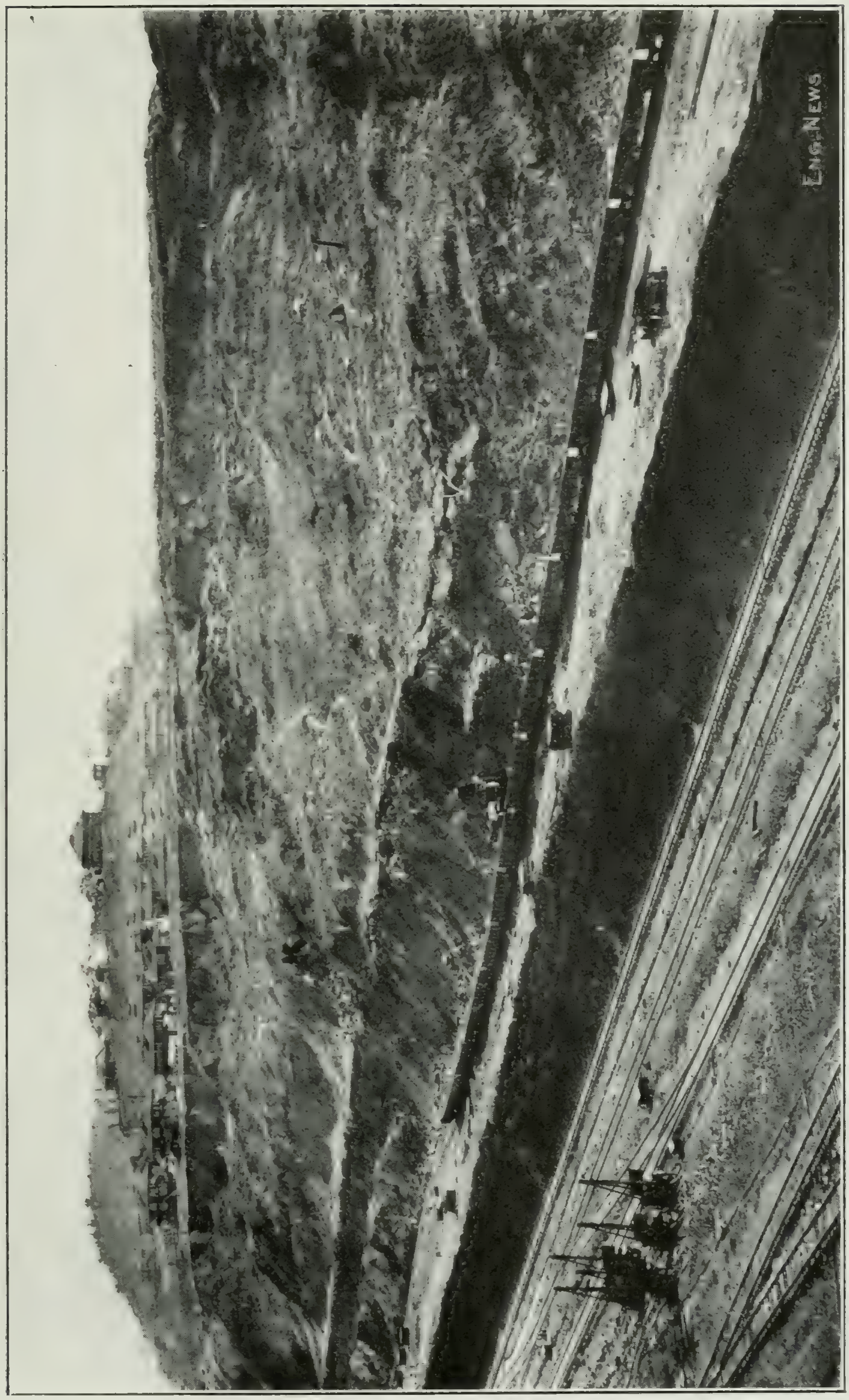


No. 107—Culebra Cut, steam shovels working on final bottom.
(Kind permission Engineering News).

The total amount of material removed during the year outside of the slope lines and because of slides aggregated 5,915,000 c. yds., or 35·90% of the total amount of material removed from the cut as against 30·07% during the previous fiscal year. The total amount of material due to slides so far removed aggregates 16,671,000 cu. yd., and the estimated amount remaining is 3,595,000 cu. yd. At the Cucaracha slide, which has been practically at rest for over a year, the angle of repose is somewhat steeper than 1 on 5, while at the Culebra slide on the west bank, where the material is still moving, the present slope is about 1 on 5. In the slide on the west bank of the canal just north of the village of Culebra, the moving material is of stratified rock moving in mass on a layer of lignite which has an inclination of 1 on 7. This slide developed early in the dry

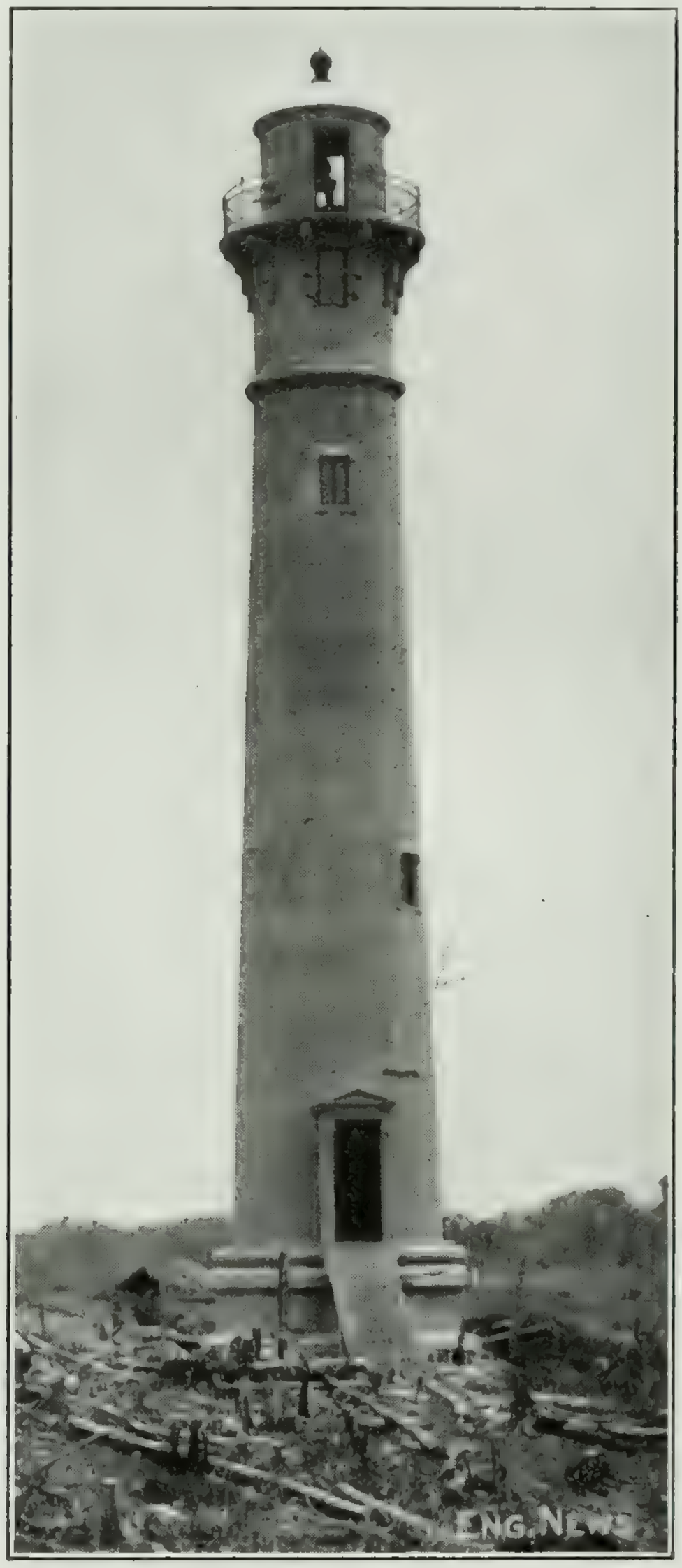


No. 108—Pedro Miguel, showing cellular extension walls above and below. (Kind permission of Engineering News.)



No. 109—Million cubic yard slide Culebra. Moved 5 feet a day on 7 to 1 slope.
(Kind permission Engineering News)

season. These very flat slopes of the bank in the deepest portions of the cut explain the large amount of material added by slides and breaks over the original estimates. A number of relatively small slides developed as the cut was deepened but the largest one now in motion is that which results from a break in the west bank of the canal at Culebra and covers an area of about 63 acres. From this slide 2,710,000 c. yds. were removed during the fiscal year just ended, making a total



No. 110—Typical concrete lighthouse.
(Kind permission Engineering News.)

thus far taken out of 6,765,000 c. yds., and leaving still to be handled an estimated amount of 1,300,000 c. yds. The next largest slide lies on the east side of the cut, opposite Culebra, and covers an area of 50·7 acres. From this slide 1,960,000 c. yds. were removed during the past fiscal year, making a total of 4,290,000 c. yds. that have deen taken out since it started in 1907; it is estimated that 600,000 c. yds. still remain.

Thus far increases in the estimates of material to be removed, made necessary by the slides, will cause no increase in the total estimated cost of Culebra Cut, as the division costs were reduced during the past year, effected in part by

increased efficiency of the organization, by the fewer interruptions in the transportation service by slides and water, by the better conditions generally of the dumps, and by the upkeep of the output, due to the amount removed by the shovels on the upper reaches. It is also of interest to note that none of the slides which occurred during the year would have interferred with the passage of ships had the canal been in operation.

The Naos Island dike or breakwater is to extend from the shore at East Balboa to Naos Island, a distance of 3.29 miles from the mainland, and is constructed for the purpose of cutting off silt-bearing currents from the excavated channel in the Pacific, thereby reducing the cost of maintenance and making navigation of the channel easier by eliminating the cross-currents.

In constructing the dike, a pile trestle is being driven from which material is dumped. Prior to June 30, 1911, the trestle had been constructed for a total distance from the shore line of 2·78 miles. During the fiscal year this trestle was extended 1,360 ft., giving a total length of trestle constructed to June 30, 1912, of 16,051 ft., or 3·04 miles. The length of the trestle on June 30, 1912, was 1,320 ft. from Naos Island, and the fill was extended to within 2,000 ft. of its end, or 3,320 ft. from the island. Much trouble was experienced during the past two years in extending the fill, due to the sliding of the bottom under pressure, caused by the weight of the stone dumped from the trestle. The total vertical settlement at one locality on the dike during the year aggregated 125 ft.

The elevation of the top of the trestle is 14 ft. above mean tide, and the average depth of the water for the last mile of trestle construction is about 15 ft. at mean tide, giving a total height of trestle of about 29 ft. above the original bottom. When the rock is dumped from the trestle it begins to settle as soon as it attains a height of a few feet, displacing adjacent material which, pushing up, forms a parallel ridge of mud. By the time the rock fill has been completed to full height these parallel ridges are about 80 ft. from the centre of the track. Experience shows also that the trestle is pushed out when the fill reaches the height of mean tide and cuts off communication beyond the break.

To lessen the difficulties and to spread the foundations as much as possible, suitable material removed by the dredges in the channel was dumped in front of the trestle and spread for a considerable distance on either side of the centre line. A Board appointed to submit a plan for hastening progress on the construction of this breakwater recommended the building of a double trestle, dumping on either side, thereby spreading the fill and continuing the fill to mean tide out to the island, thereby saving the trestle, which is to be made more substantial than formerly. When the fill has been extended to the island it is to be carried to full height, commencing at the island; should a break then occur in the trestle, there would be considerable length of it left to fill over. This was approved, and the double trestle is being built.

The average division cost of excavation for the year, including plant charges and all items which entered into its accomplishment was $0.5101 per c. yd.

Pacific Division.

The work of this division consists of the construction of the locks and dam at Pedro Miguel, the locks and dam at Miraflores, the Ancon quarry, dredging for sand at Chame, excavating a channel between the locks and below Miraflores Locks to deep water in the Pacific. In addition, excavation necessary to prepare for work on the terminals, including coaling station, dry dock, and machine shops, was placed under this division. The work is in charge of S. B. Williamson, as division engineer.

At Miraflores, excavation of the lock pit was continued, and resulted in the removal of 624,747 c. yds., exclusive of that for preparing foundations. The average cost for lock excavation was $0.6566 per c. yd. The surface of the rock on which the Miraflores locks are founded dips rapidly at the north end of the site. The walls were originally located with their northern extremities on rock which was only a few feet above the desired grade. After the excavation for the locks had been begun, changes in design necessitated extending the walls 98 ft. farther north, thereby not only increasing the amount and depth of excavation required to secure suitable foundations, but adding materially to the difficulties and cost.

The total amount of concrete placed in the Miraflores locks during the past year was 751,540 c. yds., made up of 729,096 c. yds. of plain and 22,444 c. yds. of reinforced concrete. The construction and auxiliary plants placed 401,079 c. yds. and 350,461 c. yds. respectively. The total amount of masonry laid in the locks on the Pacific side was, therefore, 934,410 c. yds. and 174 c. yds. in the wing walls. The average cost of the concrete placed was $4.5867 per c. yd. of plain concrete and $10.6388 per c. yd. for reinforced concrete.

The total amount of concrete laid in the Pacific division locks to July 1, 1912, aggregated 1,874,029 c. yds., at an average cost of $5·0264 per c. yd. There remained to complete the locks 51,150 c. yds. at Pedro Miguel, as already noted, and 386,729 c. yds, at Miraflores.

The crushed stone for concrete in the Pacific locks was obtained from the Ancon quarry, which, with the crusher plant, was operated throughout the year. The total amount produced by the plant was 839,279 c. yds., at a cost of $0·6720 per c. yd. in the bins. The cost of stone delivered in the stock piles at the locks was $0·7796 per c. yd.

Sand for the lock masonry and other concrete construction was obtained from Chame Bay, located about 20 miles west of Balboa. It is secured by dredging, thence loaded into barges, towed to Balboa and transferred to bins by rapid unloading cranes. During the year 564,837 c. yds. were unloaded, at an average operating cost of $0·1177 per c. yd., exclusive of charges for plant. From the bins it is loaded by gravity into cars and transported to the storage piles at the lock sites or to such other points as may be desired. The cost of the sand in stock piles was $0·7025 per c. yd.

Excavation of the channel by steam shovels between Pedro Miguel and Miraflores and south of the latter was continued ; 864,475 c. yds. were removed during the year, of which 411,987 c. yds. were of earth and the remainder of rock. The average cost was $0·7527 per c. yd.

The hydraulic excavation plant was in operation throughout the year in the sea level section of the canal south of Miraflores, and excavated 900,596 c. yds. of material. The total cost of handling this material, earth and rock, was $0·5564 per c. yd.

The dredges operating in the canal during the year below Miraflores were the 20-in. seagoing suction dredge *Culebra*, the 5-yd. dipper dredge *Cardenas*, three French ladder dredges, and, for a period of three months at the close of the fiscal year, the new ladder dredge *Corozal*. During the year the dredges removed 4,683,902 c. yds. at an average cost of $0·19 per c. yd. There remained at the close of the fiscal year to complete the excavation in the channel 4,194,059 c. yds., including 700,000 c. yds. estimated allowance for silting.

Second Division, Chief Engineer's Office.

This division has charge of all mechanical questions that may arise, and supervises expenditures and allotments for the work. The third division of the

Chief Engineer's office was abolished on Jan. 24, 1912, after the resignation of C. M. Saville, assistant engineer formerly in charge, and the work transferred to the second division. To this division was also assigned the design of the dry dock, coaling stations, shops, and appliances in the form of harbour tugs, cranes and barges. The division is in charge of H. H. Rousseau, U.S.N., as assistant to the chief engineer.

On the assumption that favourable legislation would be provided, general and detailed plans of the terminals were undertaken, with a view to beginning work of construction as soon as funds should become available. The general layout of the terminals at the Atlantic and Pacific entrances to the canal is arranged with the object of affording sufficient wharves and piers to meet all requirements when the canal is opened, and at the same time to permit of extension in case future needs so require. In addition to wharf space for vessels, the general plan provides the necessary facilities for docking and repairing all classes of vessels and for furnishing them with fuel, fresh water, and supplies of all kinds. As these facilities may be required for military purposes, as well as commercial, all general plans were submitted to the Navy Department for its views, which have been followed in the final designs.

The main coaling plant at the Atlantic end of the canal will be capable of handling and storing 200,000 tons of coal, with a possible increase of 50%; 100,000 tons will be in subaqueous storage. The coaling plant at the Pacific terminus will be located at Balboa, adjacent to the site of the dry dock, and will be capable of handling and storing 100,000 tons of coal, with a possible increase of 50%; subaqueous storage will be provided for 50,000 tons. Arrangements are made for supplying fuel oil, and four tanks of 40,000 bbl. capacity each are under advertisement, which will give an initial storage capacity of 80,000 bbl. at each terminus.

The piers or docks on the Atlantic side are to be protected against storms by a mole or breakwater extending out in prolongation of the line separating the zone from Colon. They are to be 1,000 ft. in length, 209 ft. in width and 300 ft. apart. On the Pacific side the piers for commercial use will be placed at right angles to the axis of the canal, with the ends of the piers 2,650 ft. from the centre of the 500 ft. canal channel. The piers will be 1,000 ft. long and 200 ft. wide, with 300 ft. slips between the piers. The construction of one pier is to be undertaken.

The superstructure of the commercial piers and wharves will be one-story steel sheds, with a clear height of 25 ft. The sheds, of fireproof construction, will cover the entire pier, except for a space of about 18 ft. along each side and the outer ends. A track will extend along each edge of the piers at floor level, and two tracks will run through the centre of the pier sheds, so depressed as to bring the car floor level with the floors of the sheds.

Much study was given to providing for the economical handling and storing of freight at the terminals, but the best type of cargo-handling appliance cannot be determined at this time, as the amount of freight that will be moved from ship to ship at the terminals, or will require storage, is at present unknown.

The plans provide for one dry dock capable of accommodating any vessel that can pass through the canal locks. It will have a usable length of 1,000 ft., an entrance width of 110 ft., and a depth over the keel blocks of 35 ft. at mean sea level. The dock will be built in the rock, which will be lined with concrete after it has been excavated. The borings indicate that the rock is strong, solid and well suited for such construction.

In lieu of the marine railway at first contemplated for smaller classes of vessels, an auxiliary dry dock will be provided, and a suitable foundation on similar rock has been found for it. This dock will have a usable length of 350 ft., a width of entrance of 71 ft., and a depth over keel blocks of 13½ft.

at mean tide. On the Atlantic side the present dry dock at Christobal, which has a usable length of 300 ft., and a width at entrance of 50 ft., with a depth over the sill of 13 ft. at mean sea level, will be retained.

Plans for the various shops, foundries, storehouses and subsidiary buildings have been approved, and specifications are prepared for furnishing the material as it is desirable to have the erection completed and the machine shops moved from Gorgona by July 1, 1913. The machines now in use will be installed in the new shops, and they will be electrically driven, both individual and group drives being used. The floor area of the buildings in connection with the shops aggregates 491,380 sq. ft.

For the expeditious and convenient handling of lock-gate leaves, as well as for commercial and other canal needs and for general wrecking purposes, it will be necessary to provide a floating crane of the largest practicable capacity at each terminus of the canal. An investigation is now under way to determine the best manner in which these requirements can be filled.

For handling vessels of the largest size, harbour tugs of high power will be required and must be secured, as the tugs now owned by the Commission will not be satisfactory or economical for that service. It is intended to provide two large harbour tugs at each end for this purpose.

It may be reasonably expected that a large quantity of coal will have to be furnished to shipping in barges or lighters, so that the canal must be equipped with a sufficient number, not only for this service, but also for supplying fuel oil and fresh water. The Navy Department has recommended that provision be made for sufficient lighters to give a capacity of 16,000 tons of coal for the Atlantic terminus, and 8,000 tons for the Pacific end. This will be done.

During the year the locations of the permanent administration building and canal headquarters and the permanent settlements for employees have been determined. The permanent administration buildings will be on a knoll west of Ancon quarry, and quarters for employees attached thereto will be erected in the general area adjacent to and northeast of this building. Employees connected with the shops, docks and other terminal facilities will be housed in quarters erected in the area surrounding the slope of Sosa Hill and on the fill adjoining the Ancon-Balboa highway. There will be a permanent settlement at Pedro Miguel for employees of the Pacific locks and one at Gatun for employees of the Atlantic locks. The settlement at Cristobal will be maintained and also the one at Ancon.

The operation and maintenance of the air-compressor plants at Las Cascadas, Empire, Rio Grande, and Balboa are also under the mechanical division. The output of all air compressor plants operated during the year was 8,795,157,453 c. ft. of free air at 70° F., which was compressed and distributed at 100 lbs. pressure, at an average cost for the year of $0·0312 per thousand c. ft.

The total appropriations made by Congress up to June 30, 1912, amounted to $293,561,468. By Act approved Aug. 24, 1912, additional appropriations were made for the fiscal year 1913 amounting to $28,980,000, exclusive of fortifications. On June 30, 1912, $259,653,236.74, or about 69% of the total estimated cost, had been charged into the work. Of this amount, $34,183,183.48 were expended during the fiscal year 1911, or about 9% of the total estimated cost of the canal. Of the total classified expenditures to June 30, 1912 $32,547,720.75, or about 12½% were for plant and equipment for construction and for four steamships.

SESSIONAL PAPER No. 19

Construction of the New Panama R. R.

The construction of the new, or relocated, line of the Panama R.R. was continued by the engineering department of the Panama R.R. Co. during the year and was in charge of Lieut. Frederick Mears, U.S.A., as chief engineer of the Panama R.R.

At the beginning of the year construction work was confined to the stretch of road from Gatun to Gamboa. The largest embankment on this section of the railroad is 4,800 ft. long across the Brazos bottom. The rock in this valley is from 150 to 200 ft. below the surface of the ground, which is of fairly good clay from 20 to 30 ft. thick, but between this and the rock the material is very soft.

The embankment, which is 61 ft. high, was g'ven side slopes of 1 on 2, with the hope that this would spread the foundation sufficiently to enable the layer of clay to support it without disturbing the soft strata. Just before the full height was reached, however, the pressure became too great and the soft material moved out, upheaving the natural ground beyond the toes of the slopes.

When this occurred the base was widened so as to secure a slope of about 1 on 3 before any weight was added to the upper level, after which the embankment was completed to grade.

Trouble with settlements was encountered in the fills over the Quebrancha and Baja bottoms, where it was necessary to spread the base so as to secure a slope of 1 on 4; these fills were 72·70 and 68·70 feet respectively above the natural surface of the ground. In the 3 miles covered by these bottoms, 4,736,072 c. yds. of material were placed, or an average of 1,578,690 cu. yds. per mile, all necessary to secure a permanent roadbed above the proposed lake level.

Laying the remainder of the permanent track was completed, as far as practicable, by Feb. 15, 1912. The track is of 90 lb. open-hearth steel, 100% splice bars, and either creosoted or hardwood cross ties fitted with "Economy" tie-plates and screw spikes.

The slides on the east side of Culebra Cut and the necessity of maintaining through communication caused the construction of a high line around Gold Hill and the abandonment of the original plan of carrying the railroad on the 95 ft. berm through Culebra Cut. It was hoped that eventually the high line might be abandoned in favour of the 95 ft. berm, but all thought of this has been given up on account of the excessive cost of rebuilding this berm throughout the cut. The Gold Hill line summit is near the La Pita divide at elevation 271 ft. above mean sea level, and the continental divide is crossed opposite Culebra at an elevation of 241 ft. above mean sea level.

During the year 3,209,021 c. yds. of grading were completed, at an average cost of $0·345 per c. yd.

Cost Keeping.

The methods of cost keeping adopted on Jan. 1, 1910, were continued throughout the year.

Excavation in the prism by steam shovels was cheapest in the Central division, averaging $0·5101; in the Atlantic division a lower cost is shown than during the previous year—$0·5952 against $0·6010—while in the Pacific division it is higher—$0·7527 against $0·6960. There was a total of 1,443,570 c. yds. of masonry laid in the locks and spillway during the year. The unit costs for the masonry were: Gatun Locks, $7·7552; Gatun spillway, $7·0988 Pedro Miguel locks, $6·4640; Miraflores locks, $4·7675. The labour costs for

the year per cubic yard of plain concrete at the various locks and spillways show lowest at Miraflores, $0·8394; next, Gatun locks, $1·3840; Pedro Miguel locks, $1·4733; and Gatun spillway, $1·5425.

The cost of concrete piling at Gatun was $0·0679 less during the year than in 1911, while the cost in place was $0·7088 less. The total amount driven was 83,670 lin. ft., at a cost of $1·5719 per lin. ft.; in addition, 51,450 lin. ft. of wooden piles were driven, at a cost of $0·6516 per lin. ft. On this basis had wooden piling only been used for the south approach pier, a saving of $77,000 would have resulted.

Department of Sanitation.

This department has charge of sanitary work in the cities of Colon and Panama and, except oiling, it designates the sanitary work to be done in the Canal Zone. In addition, the department has charge of hospitals and quarantine. It is in charge of Col. William C. Gorgas, U.S.A., as chief sanitary officer.

The work in the terminal cities consists in cutting grass and brush, oiling pools, constructing and maintaining ditches for drainage purposes, removal of garbage and night soil, fumigation, and street cleaning. The work done in Panama consisted in cleaning 398 miles of ditches, digging 2·5 miles of ditches and clearing 118 acres of weeds and grass, in addition to oiling, disinfecting and fumigating. In the Colon district, from the same source, 112·5 miles of ditches were maintained, 8 miles of ditches constructed, and 217 acres cleared of vegetation, in addition to oiling, disinfecting, fumigating, etc.

The impression is general elsewhere than on the Isthmus that the sanitary work, in the way of clearing land, extends over the entire area included within the limits of the Zone, so that it is interesting to note, in this connection, that of the 278,848 acres comprised within those limits less than 1,200 acres are kept cleared for sanitary purposes and on sanitary requests, outside of the military reservations, where the work is done by the troops.

Almost the entire Zone is in its original condition as regards brush and jungle.

The total expense for sanitary work in the canal Zone and in the cities of Panama and Colon was $596,608·73, of which $67,968·19 were for sanitation proper in the two cities, $409,205·84 for sanitation proper in the Zone, $18,672.50 for removal of garbage and street cleaning in the two cities, and $100,760.20 for removal of garbage and street cleaning in the Zone.

Reporting on the health conditions on the Isthmus, the chief sanitary officer states that the total admissions to hospitals and sick camps, including those sick in quarters, during the year was 48,307; that the daily average sick was 22·91 out of every thousand employees, as against 24·77 for 1910-11 and 23·01 for 1909-10, on the basis that the total numbers employed during the years mentioned were 50,008, 49,129, and 50,535, respectively; that the total number of which 35 were Americans, 79 were white employees of other nationalities, and 394 were blacks; that the total number of deaths from violence among all employees was 154, as against 178 for the preceding year.

Date of Completion of the Canal.

A year has passed since the last annual report, in which was noted the dates by which the various parts of the work were to be completed, and the situation has been modified somewhat, so that more accurate information can be given than was possible at that time. The division engineer of the central division reported at the close of the year that if no more material due to slides had to be removed than the increase which the revised estimates of July 1, 1912,

contemplated, the excavation through the Culebra Cut would be completed by July 1, 1913, or the same date as was fixed a year ago. Though additional slides have occurred since the close of the fiscal year, there has been no decrease in the force, so that it is still possible to complete it as predicted, though the date must depend upon the slides.

In the Atlantic division, concrete work at the north end of the locks remains to be completed. As outlined in the report, excavation in the area below by dredging was not begun until February, 1912, and it is reported by the division engineer that, due to slides, the date for completing the concrete will now be June 30, 1913. On account of increase in the additional quantity of dry fill that must be added to the dam, July 1, 1913, is now the date fixed for completing this work, and Aug. 1, 1913, is fixed as the date for completing the Gatun spillway.

In the Pacific division the division engineer now estimates that the locks will be completed in their entirety by Jan. 1, 1913, by which date the dams at Pedro Miguel and Miraflores will also be finished, and that the spillway at Miraflores locks will be completed by June 30, 1913. The delay of seven months in the delivery of the dredge *Corozal* threatened to cause a delay in completing the excavation in the channel below Miraflores by the amount that it was estimated the dredge would remove in that time. However, a large portion of this excavation will be done by steam shovels, thus reducing the length of time sufficiently to permit the completion of the channel by June 30, 1913.

As already noted, the contract for the lock gates has not been carried out as rapidly as was anticipated, and the contractor has been called upon to finish the gates in one flight of locks first, so that if the rest of the work is in condition passage of ships can be permitted by the use of one of the flights instead of both. While delays have occurred in the delivery of the lock machinery and accessories, the assistant chief engineer is so organizing his work as to have completed sufficient machinery to meet the conditions that the lock-gate contract will furnish. It is probable that certain features of the work will not be finished until some time after the first vessel passes the locks. These are features, such as the power-generating station, the transmission line, the aids to navigation, etc., which, though important in themselves, are not essential to the preliminary trial of the system.

(Signed) GEO. W. GOETHALS, Colonel,
Corps of Engineers, U.S.A., Chairman and C. E.

APPENDIX C.

A SUMMARY OF EIGHT YEARS' WORK ON THE PANAMA CANAL.

Eight years prior to May 4, 1912, the United States government assumed the gigantic engineering undertaking of building a canal across the Isthmus of Panama. This was 23 years after work had been inaugurated by the French under De Lesseps (1881) and after nearly $400,000,000 had been expended by the French Companies.

For the rights of the French company the United States paid $40,000,000. This amount paid for some 78,000,000 c. yds. of excavation and a great variety of equipment, some of which has been in continuous use since, but by far the greater part has been sold as scrap metal. Of the 78,000,000 c. yds. excavated by the French, only 30,000,000 c. yds. came within the canal prism as it has ultimately been constructed.

On May 1, 1912, under the direction of American engineers, 171,250,000 c. yds. of material had been excavated, and less than 24,250,000 c. yds. remained to be removed, which is being done at the rate of 2,500.000 c. yds.

a month. The excavation of Culebra cut is more than 90% completed. Each year has seen a greater record made in the work of excavation than that of any previous year. From May 1, 1911, to May 1, 1912, the amount of material removed was nearly 16,500,000 c. yds., and much of this was rock.

The lowest steam shovel cut is now less than 17 ft. above the bottom of the channel at Culebra, the summit of excavation. From this point the cut runs to final grade at both ends. At the north end the excavation is practically completed from the Chagres River as far south, toward Culebra, as Las Cascadas; and at the south end the trench is nearly to grade for a mile or more. The greater part of what remains to be excavated lies between Empire and Gold Hill, a distance of about two miles.

On May 1 the great concrete locks at Gatun and Pedro Miguel were almost ready, except for the gates, and the locks at Miraflores were more than 65% completed, with the work advancing at the rate of 20,000 cu. yds. of concrete a week placed.

At Gatun, for the locks and dam nearly 2,000,000 c. yds. of concrete have been made and placed since the work was begun. At the Pedro Miguel locks the total placed is about 840,000 cu. yds., and at Miraflores, nearly 900,000 c. yds. This makes a grand total of about 3,700,000 c. yds. of concrete, or enough to pave the entire surface of the Island of Manhattan to a depth of 2¼ in., or to make a single cube 464 ft. on a side.

The manufacture of the great steel gates was started in October, 1910, and their erection on the Isthmus began the following June. On Mar. 31, 1912, the erection of these 58,000 tons of structural steel into 46 pairs of lock gates was already one-quarter completed, a task which entails the driving of 6,000,000 field rivets. The contract for machinery for operating the gates was let in June, 1911, and erection was begun in January, 1912; at this writing, one gate at Gatun has already been fully equipped and successfully operated.

Of the rising stem valves, 10 ft. 8 in. wide and 18 ft. 10 in. high, which control the flow of water into the lock chambers, two had already been put in place on Mar. 31, 43 were ready for erection, and the contract for the entire 134 had been let—a total of 1,876 tons of metal. The installation of the special cylindrical valves which control the flow of water from the centre culverts into the lock chambers is practically completed, except for a few in the Miraflores locks. There are 120 valves of this type. The contract for the electric motors operating the valves has been let and their erection is under way.

The erection of the first six great emergency steel dams which will guard the upper levels of the locks in case of accidents to the gates has been begun at Gatun, and the fabrication of the other five is under way in the United States. The design and operation of these dams was described in *Engineering News* of July 22, 1909. Each is built essentially of a pair of cantilever trusses 263 ft. long, so pivoted that their longest arm may be swung across the 110-ft. locks and the wicket girders which form the dam dropped into place. The total weight of the six dams is 12,000 tons.

The fender chains for preventing unmanageable ships from colliding with the gates and hydraulic apparatus for operating them are in process of manufacture. The chains are being made at the Boston Navy Yard, and one of them has been completed and recently passed a successful test. The fenders for the approach walls, which were described in *Engineering News* of Nov. 2, 1911, will soon be ready to place in position.

Practically every detail of the lock operation has been worked out. The contract for one of the electric towing locomotives, of which there are to be 40, has been let and it is now being built in the United States. The electrical apparatus required to operate the locks includes 944 motors, all of 220-volt, 25-cycle, 3-phase alternating-current type, and of these 803 have already been

contracted for. The contract for the hydro-electric plant at Gatun, which will furnish most of the power for the operation of the locks, has been let, and work on the station building will soon be started.

The Gatun dam is rapidly nearing completion. As already noted in *Engineering News*, the concrete spillway is so far completed as to make possible the closing of the sluice gates, and in the course of a few months Gatun Lake will be at an elevation of 50 ft. above sea level. The hydraulic fill on the east section of the great earth dam has been completed, and the placing of the dry fill on this section to its final elevation of 107 ft. above sea level is progressing rapidly. At the same time the work of paving the south face is well under way. On the west section of the dam, three suction dredges are now completing the hydraulic fill and dry material from borrow pits is being added. The west dam at Miraflores has been practically completed. The east dam there is to be a concrete wing wall and has not yet been begun. The work on the west dam at Pedro Miguel is also practically completed.

The terminal plans and work on them were briefly described in *Engineering News* of May 30. Work on the fortifications to guard the entrances of the canal was begun during the present year. Plans for lighting the canal by beacons and buoys are completed and approved, and work on them has also been begun. Besides all this work in constructing the canal proper, almost the entire line of the Panama R.R. has been relocated and the work of rebuilding on the new location is nearly completed.

Thus, at the end of eight years of American industry, the end of the great undertaking, without failure in any detail, is actually in sight. Already labourers are being discharged and greatest pressure of work has passed.

To accomplish this the United States has expended, up to Mar. 31, 1912, $252,000,000, including the payments to the French company and the Republic of Panama. Excluding this $50,000,000, we have just half the amount expended in 23 years by De Lesseps in a futile attempt to accomplish much less of an undertaking.

The actual amount which has been charged to the department of construction and engineering during the eight years of American work is $144,600,000. The expenses of the department of civil administration, which includes also the maintenance and operation of public works in the Canal Zone and in the cities of Colon and Panama, the construction and repair buildings and the survey of the Canal Zone amounted to $5,515,000. The Department of sanitation, which has contributed in so large a measure to the success of the enterprise, had expended nearly $14,500,000. General items, which include the payments to the French company and to the Republic of Panama, the construction of waterworks and sewerage in the cities of Colon, Panama, and in the Canal Zone, the Panama R.R. expenses, the cost of terminals, lands purchased, etc., amounted to $86,720,000.

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PUBLIC WORKS, CANADA

GEODETIC LEVELLING

LIST OF PROMINENT BENCH MARKS

BETWEEN

STEPHEN, MINN., AND WINNIPEG BEACH, MAN.

1912

AND BETWEEN

TRENTON ON LAKE ONTARIO, AND ORILLIA, ON LAKE COUCHICHING, ONT.

1908

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1913

Superintending Engineer's Office.

Canadian Geodetic Levelling

Ottawa, Ont. May 1st 1912.

E. D. Lafleur, Esq.,
Chief Engineer
Public Works Dept.,
Ottawa.

Sir —I hereby submit the following report on the Geodetic Levelling operations for the summer of 1911, which were as follows:

Work was started the first week of July at Moncton N.B. and by the end of that same month, Anagance N.B. had been reached; some thirty (30) miles S.W. of Moncton, along the Intercolonial Railway towards St. John.

By this time an order came from headquarters that more pressing work was required to be done around Winnipeg. Therefore the New Brunswick work was abandoned for the season and August and September were taken up doing the Manitoba levelling.

As we (The Canadian branch of Geodetic Levelling) had not a bench mark in Winnipeg and that our nearest bench was at North Bay (1,050 miles East) it was considered advisable to use a United States bench mark at Stephen Minn. only 110 miles south of Winnipeg.

The levelling was run along the Great Northern Ry. to Emerson, Man., and there to Winnipeg the C.P.Ry. was used. A branch line was also run along the C.P.Ry. to Winnipeg Beach on Lake Winnipeg.

Appended hereto will be found the results of the levelling between Stephen Minn., U.S.A. and Winnipeg Beach, Man.

In the fall of 1908 (At the request of the Deputy Minister of Railways and Canals) levelling operations were run between Trenton and Orillia, Ont. The object of this work was to obtain more accurately the correct elevations along the route of the Trent Valley Canal.

The results of this work was handed over to the above mentioned Dept. but never published by our Dept. I therefore append the results of this work also.

Yours obediently,

CHARLES F. X. CHALONER.

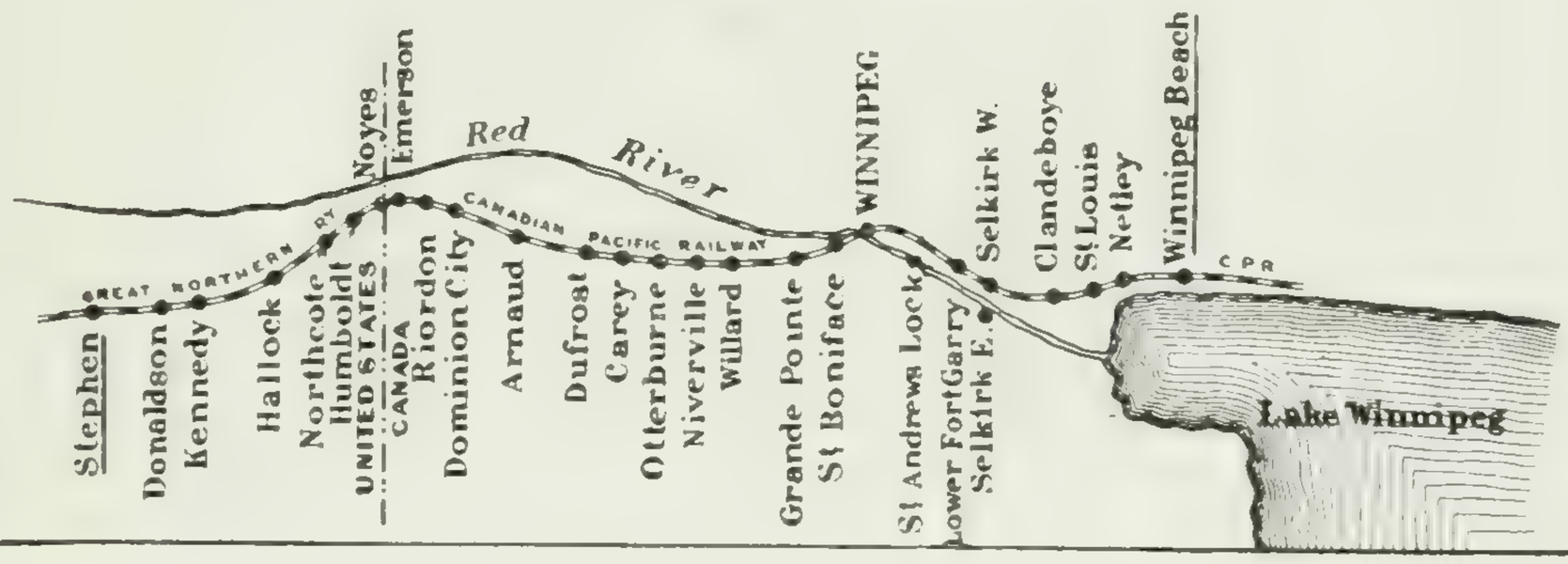
LIST OF PROMINENT BENCH MARKS, ETC.,

BETWEEN

STEPHEN, MINN., AND WINNIPEG BEACH, MAN.,

1912

SKELETON MAP
Showing
LINE OF PRECISE LEVELLING
Between
STEPHEN, MINN., U.S.A. AND WINNIPEG BEACH, CANADA.
— 1911 —



PROMINENT BENCHMARKS

B. M.		Feet above Datum
R 6	On S.E. corner of Public School building, on 5th Street, Stephen, Minn., U.S.A.	831·21
Q 6	On 2nd step, main entrance to bank of Stephen,	830·93
MCCCCLXXXVI	On S.E. corner of M. Hannum's storehouse, facing railway, Donaldson Depot,	828·71
MCCCCLXXXVII	On N.W. corner of Elevator No 11, at Kennedy depot,	827·37
MCCCCLXXXVIII	On S.E. corner of G.N.Ry. water tank, at Hallock depot,	818·63
MCCCCLXXXIX	On S.W. corner of St Anthony & Dakota Co Elevator No 7, Northcote depot,	803·30
MCCCCLXXXV	On N.E. corner of J.J. Hill's Elevator at Humboldt depot,	794·05
MCCCCLXXXII	On front of Public School building, Morris St. Emerson, Man., Canada	792·63
MCCCCLXXXIII	On front of Town Hall building,	788·97
MCCCCLXXXIV	On S.W. corner of P.O. building,	786·80
MCCCCLXXXI	On N.W. corner of C.P.R. water tank,	792·21
MCCCCLXXVII	On S.E. corner of C.P.R. bridge over Roseau R., Dominion City,	782·28
MCCCCLXXVIII	On small Engine House, facing railway, at Arnaud depot,	796·37
MCCCCLXXIX	On S.W. corner of A. Hubert's Residence, at Carey depot,	783·18
MCCCCLXXX	On N.W. corner of C.P.R. bridge over Rat River, at Otterburne,	779·79
MCCCCXCIII	On N.W. corner of Robert's Hotel, at Niverville,	776·18
MCCCCXCII	On S.E. corner of W.C. Flour Co. Office building, at St. Boniface,	760·87
MCCCCXCI	On S.W. corner of C.P.R. bridge over Red River, Winnipeg	760·77
M DIV	On W. face of E. abut. G.T.P. overhead crossing of C.P.R,	752·13
M DV	On N.E. corner of Fort Garry Terminal Station,	766·12
M DVI	On S.E. corner of Main St. bridge over Assiniboine River,	753·47
MCCCCXC	On N.E. corner of Immigration office, C.P.R. depot,	768·00
MCCCCXCVII	On N.W. corner of Royal Alexandra Hotel,	767·65
M DIII	On N.W. corner of City Hall building,	763·78
MCCCCXCVIII	On N. pier, Salter St. crossing over C.P.R. tracks,	763·60
MCCCCXCIX	On S. wall of C.P.R. roundhouse,	766·20
M D	On W. wall of C.P.R. small oil building, at Middle Church,	758·26
M DI	On W. end wall of St. Andrew's dam, E. side of Lock,	737·97
M DII	On N. side of main entrance to Lower Fort Garry,	760·52
MCCCCXCVI	On N.W. corner of P.O. Building, at Selkirk W.,	742·18
MCCCCXCV	On N. wall of sectionman's residence at Clandeboye,	743·19
MCCCCXCIV	On S.E. corner of C.P.R. water tank, at Winnipeg Beach,	727·46

Datum. Mean Sea level of Atlantic Ocean

B. del.

Descriptive List of most Important Permanent Bench Marks, etc.

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above Mean Sea Level.
			
R.6.	U.S.A. bench mark at Stephen, Marshall Co. Minn.—Chisel line on end of copper bolt driven horizontally into 8th course of brick above water table, 2 ft. from S. end of E. side wall of Public School building on 5th. Street. 500 meters W. of depot.....	·00	831·21
			
Q.6.	U.S.A. bench mark at Stephen, Marshall Co. Minn.—N. end of top of 2nd step of entrance to the red brick building owned by the Bank of Stephen, on the N.W. corner of Pacific Avenue and 5th Street.....	·22	830·93
	Base of G.N. Ry. rail at Stephen depot.....	·25	830·05
	Base of G.N. Ry. rail at crossing.....	·62	830·83
	Approximate bed of G.N. Ry.....	1·00	830·75
	Approximate bed of G.N. Ry.....	2·01	830·32
	Base of G.N.Ry. rail at crossing.....	2·65	828·04
	Approximate bed of G.N. Ry.....	3·00	827·47
	Base of G.N. Ry. rail at crossing.....	3·65	827·11
	Approximate bed of G.N. Ry.....	4·01	826·81
	Base of G.N. Ry. rail at crossing.....	4·65	826·53
	Approximate bed of G.N. Ry.....	5·00	826·65
	Base of G.N. Ry. rail at crossing.....	5·66	827·55
	Approximate bed of G.N. Ry.....	6·00	826·46
	Base of G.N. Ry. rail at crossing.....	6·65	826·94
	Approximate bed of G.N. Ry.....	7·01	827·44
	Base of G.N. Ry. rail at crossing.....	7·66	826·82
	Approximate bed of G.N. Ry.....	8·01	826·27

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DESCRIPTIVE List of most Important Permanent Berch Marks, etc.—*Continued.*

Bench Mark. .	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
C. B.⊖M. MCCCCLXXXVI	Chisel line on end of copper bolt driven horizontally into concrete foundation, 17·6 ft. from S. end of W. wall of Martin Hanmuns general store facing G.N. Ry. depot at Donaldson	8·63	828·71
	Base of G.N. Ry. rail crossing	8·65	829·52
	Base of G.N. Ry. rail at Donaldson depot	8·74	829·51
	Approximate bed of G.N. Ry	9·01	829·12
	Base of G.N. Ry. rail crossing	9·66	828·05
	Approximate bed of G.N. Ry	10·00	827·16
	Base of G.N. Ry. rail crossing	10·67	827·64
	Approximate bed of G.N. Ry	11·02	828·04
	Base of G.N.Ry. rail at crossing	11·66	830·59
	Approximate bed of G.N. Ry	12·01	830·93
	Base of G.N. Ry. at crossing	12·63	831·78
	Approximate bed of G.N. Ry	13·01	829·85



C. B.⊖M. MCCCCLXXXVII.	Chisel line on end of copper bolt driven horizontally in stone foundation 10·6 ft. from W. end of N. wall of Federal elevator No. 11 S. of Kennedy depot	13·50	827·37
	Base of G. N. Ry. rail at Kennedy depot	13·52	828·76
	Base of G.N. Ry. rail at Kennedy Crossing	13·55	828·47
	Base of G.N. Ry. rail at crossing	13·67	827·30
	Approximate bed of G.N. Ry	14·01	825·82
	Base of G. N. Ry. rail at crossing	14·68	824·22
	Approximate bed of G.N. Ry	15·01	823·99
	Base of G.N. Ry. rail at crossing	15·69	824·50
	Approximate bed of G.N. Ry	16·00	824·39
	Base of G.N. Ry. rail at crossing	16·69	825·32
	Approximate bed of G.N. Ry	17·02	824·86
	Base of G.N.Ry. rail at crossing	17·63	824·45
	Approximate bed of G.N. Ry	18·01	824·39
	Base of G.N. Ry rail at Chatham siding	18·47	824·05
	Base of G.N. Ry. rail at crossing	18·70	823·94
	Approximate bed of G.N. Ry	19·00	823·73
	Base of G.N. Ry. rail at crossing	19·68	823·08
	Approximate bed of G.N. Ry	20·00	822·62
	Base of G. N. Ry. rail at crossing	20·70	820·70
	Approximate bed of G.N. Ry	21·00	821·03
	Base of G.N. Ry. rail at crossing	21·80	821·44
	Approximate bed of G.N. Ry	22·01	822·99
	Base of G.N. Ry. rail at crossing	22·61	818·31

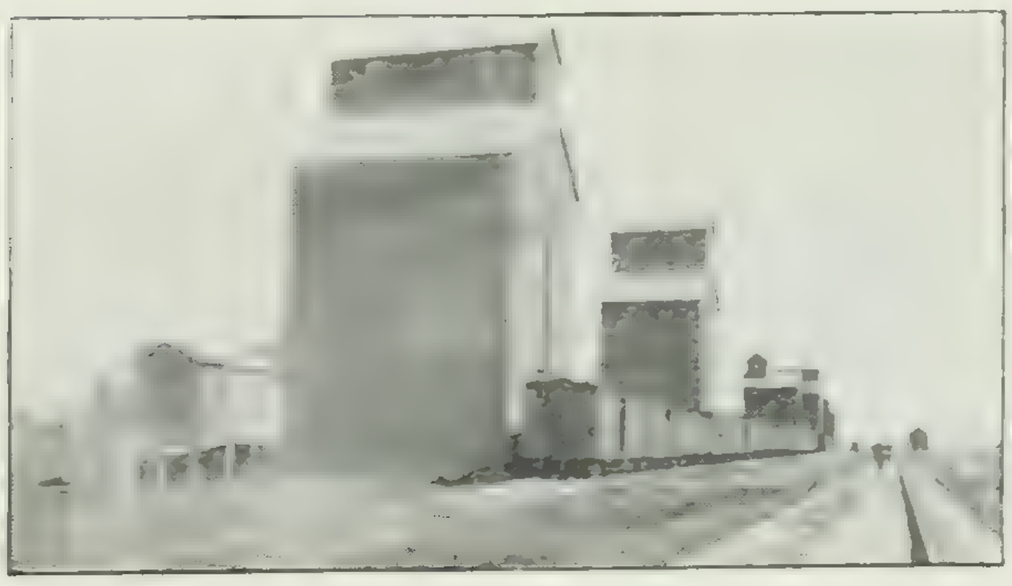
DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MCCCCLXXXVIII.	Chisel line on end of copper bolt driven horizontally into E. face of stone block support, at S.E. corner of G.N. Ry. water tank at Hallock depot	22·70	818·63
	Base of G.N.Ry. rail at Hallock depot	22·74	818·17
	Base of G.N. Ry. rail at Hallock crossing	22·78	818·18
	Base of G.N.Ry .rail at Hallock crossing	22·87	817·87
	Approximate bed of G.N. Ry	23·01	817·03
	Base of G.N. Ry. rail at crossing	23·62	816·47
	Base of G.N.Ry. rail over Two River S. br	23·90	816·35
	Approximate bed of G.N. Ry	24·03	815·34
	Base of G.N. Ry. rail at crossing	24·96	814·84
	Approximate bed of G.N. Ry	24·99	814·81
	Approximate bed of G.N. Ry	26·01	815·92
	Base of G.N. Ry. rail at crossing	26·10	815·29
	Approximate bed of G.N. Ry	27·01	807·87
	Base of G.N. Ry. rail at crossing	27·27	806·87
	Approximate bed of G.N. Ry	27·37	806·28
	Base of G.N. Ry. rail at crossing	27·85	807·08
			
C. B.○M. MCCCCLXXXIX	Top of copper plug driven vertically in stone base, 10·7 ft. N. of S.W. corner of St. Anthony & Dakota elevator Co. No. 7 at Northcote depot	28·19	803·30
	Base of G.N. Ry. rail at Northcote depot	28·25	804·60
	Base of G.N. Ry. rail at Northcote crossing	28·28	804·48
	Approximate bed of G.N. Ry	28·36	803·50
	Base of G.N. Ry. rail over Two River N. br	28·61	801·54
	Base of G.N. Ry. rail at crossing	28·70	801·70
	Approximate bed of G.N. Ry	29·37	799·08
	Base of G.N. Ry. rail at crossing	29·64	799·30
	Base of G.N. Ry. rail at crossing	30·31	799·82
	Approximate bed of G.N. Ry	30·39	800·29

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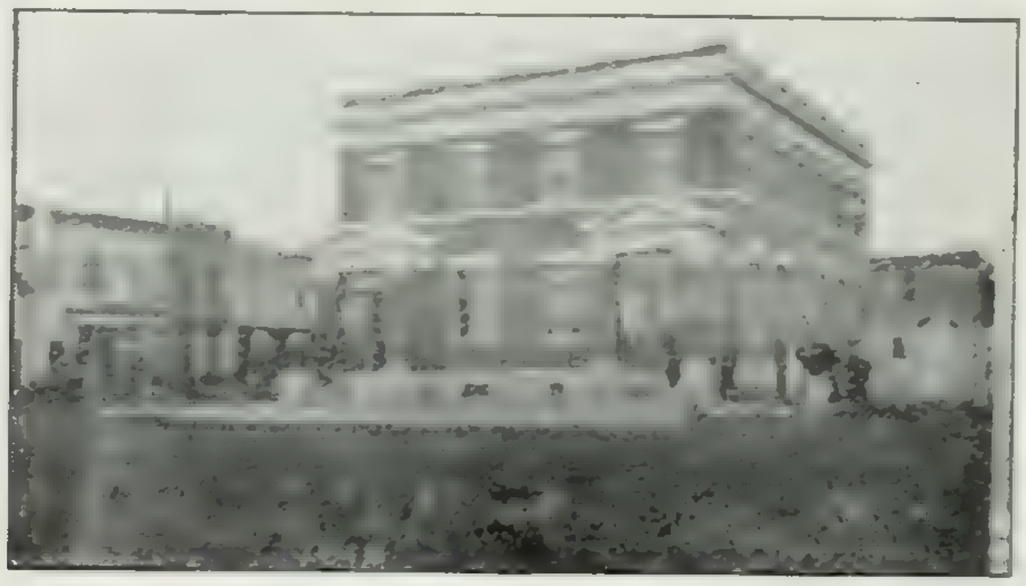
DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
	Approximate bed of G.N. Ry	31·38	798·96
	Approximate bed of G.N. Ry	32·38	797·48
	Base of G.N. Ry. rail at crossing	32·70	797·76
	Approximate bed of G.N. Ry	33·38	797·45
	Base of G.N. Ry. rail at crossing	34·22	797·51
	Approximate bed of G.N. Ry	34·37	797·19
	Base of G.N. Ry. rail at Humbolt depot	34·89	795·99
	Base of G.N. Ry. rail at Humbolt crossing	34·96	795·96



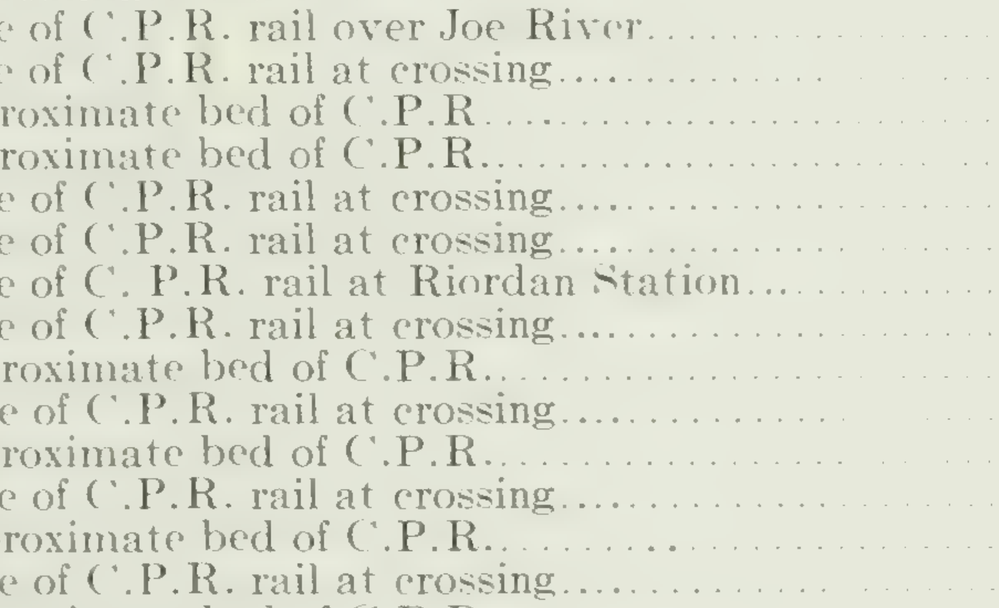
C. B.M. MCCCCLXXXV.	Top of copper bolt driven vertically in 2nd. stone from N.E. corner, W. wall of Mr. J.J. Hill's elevator at Humbolt depot	35·12	794·05
	Base of G.N. Ry. rail opp. Hill's elevator	35·12	794·80
	Approximate bed of G.N. Ry	35·38	791·51
	Base of G.N. Ry. rail at crossing	35·58	791·91
	Base of G.N. Ry. rail at crossing	36·20	796·36
	Approximate bed of G.N. Ry	36·37	796·20
	Base of G.N. Ry. rail at crossing	36·87	796·95
	Approximate bed of G.N. Ry	37·37	797·59
	Base of G.N. Ry. rail at crossing	38·31	797·19
	Approximate bed of G.N. Ry	38·37	797·00
	Base of G.N. Ry. rail at crossing	38·90	797·17
	Approximate bed of G.N. Ry	39·38	796·68
	Base of G.N. Ry. rail at crossing	40·05	795·61
	Approximate bed of G.N. Ry	40·37	795·65
	Base of G.N. Ry. rail at crossing	40·55	797·07
	Base of B.N. Ry. rail at crossing	41·37	795·07
	Approximate bed of G.N. Ry	41·38	795·01
	Base of G.N. Ry. rail at crossing	42·38	792·68
	Base of G.N. Ry. rail at Noyes depot	42·87	790·12
	UNITED STATES—CANADIAN BOUNDARY LINE.		
	Base of C.P.R. rail at boundary crossing	42·98	792·64
	Base of C.P.R. rail at crossing of C.N. Ry	42·99	792·39
	Base of C.P.R. rail at crossing	43·12	792·31
	Base of C.P.R. rail at Emerson Station	43·26	792·71

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MCCCCLXXXII.	Chisel line on end of copper plug driven horizontally in 4th stone course above ground, E. side of main entrance to Public School building, Morris St. Emerson, Man.....	43·62	792·63
			
C. B.⊖M. MCCCCLXXXIII	Chisel line on end of copper plug driven horizontally into concrete foundation E. side of main entrance to Town Hall at Emerson, Man.....	43·80	788·97
			
C. B.⊖M. MCCCCLXXXIV.	Chisel line on end of copper plug driven horizontally into base cut stone, at W. end corner of S. wall of Post Office building at Emerson, Man.....	43·98	786·80

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Descriptive List of most Important Permanent Bench Marks, etc.—*Continued.*

Benck Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊙M. MCCCCLXXXI.	Top of copper plug driven vertically in stone base, N. W. corner of C.P.R. water tank at Emerson, Man.	43·39	792·21
	Base of C.P.R. rail at crossing	43·56	792·66
	Base of C.P.R. rail at crossing	44·02	792·12
	Approximate bed of C.P.R.	44·38	789·42
	Base of C.P.R. rail over creek	44·77	789·83
	Base of C.P.R. rail at crossing	45·22	790·16
	Approximate bed of C.P.R.	45·37	789·97
	Base of C.P.R. rail over Joe River	45·49	790·22
	Base of C.P.R. rail at crossing	46·36	794·06
	Approximate bed of C.P.R	46·39	793·89
	Approximate bed of C.P.R.	47·38	793·39
	Base of C.P.R. rail at crossing	47·42	793·58
	Base of C.P.R. rail at crossing	48·48	793·38
	Base of C. P.R. rail at Riordan Station	48·50	793·42
	Base of C.P.R. rail at crossing	49·01	792·76
	Approximate bed of C.P.R.	49·37	792·04
	Base of C.P.R. rail at crossing	49·52	792·83
	Approximate bed of C.P.R.	50·38	792·54
	Base of C.P.R. rail at crossing	50·55	792·89
	Approximate bed of C.P.R.	51·39	791·23
	Base of C.P.R. rail at crossing	51·56	791·57
	Approximate bed of C.P.R.	52·57	789·90
	Base of C.P.R. rail at crossing	52·55	789·64
	Base of C.P.R. rail at Dominion City Stat	53·17	788·02
	Base of C.P.R. rail at Dominion City Crsg.	53·23	787·47
			
C. B.⊖M. MCCCCLXXVII.	Chisel line on end of copper bolt driven horizontally into top of stone course, E. end of S. seat of C.P.R. bridge over Rosseau River at Dominion City, Man.	53·38	782·28

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
	Base of C.P.R. rail over Rosseau River	53·40	787·97
	Base of C.P.R. rail at crossing	53·58	788·24
	Approximate bed of C.P.R.	54·38	788·98
	Base of C.P.R. rail at crossing	54·63	789·51
	Approximate bed of C.P.R.	55·38	789·78
	Base of C.P.R. rail at crossing	55·71	790·54
	Approximate bed of C.P.R.	56·39	790·83
	Base of C.P.R. rail at crossing	56·78	791·99
	Approximate bed of C.P.R.	57·37	792·14
	Base of C.P.R. rail at crossing	57·86	793·11
	Approximate bed of C.P.R.	58·38	793·38
	Approximate bed of C.P.R.	59·38	794·43
	Base of C.P.R. rail at crossing	60·01	795·90
	Approximate bed of C.P.R.	60·38	795·53
	Base of C.P.R. rail at crossing	60·84	796·16
	Base of C.P.R. rail at Arnaud Station	60·97	796·00



C. B.⊖M. MCCCCLXXVIII.	Chisel line on end of copper bolt driven horizontally into brick, 2·3 ft. above ground rear wall of small engine house, in connection with Ogilvie elevator at Arnaud	61·02	796·37
	Base of C.P.R. rail opp. B.M. MCCCCLXXVIII)	61·02	795·94
	Base of C.P.R. rail at street crossing	61·08	796·07
	Approximate bed of C.P.	61·39	795·95
	Base of C.P.R. rail at crossing	62·14	795·81
	Approximate bed of C.P.R.	62·38	795·58
	Base of C.P.R. at rail at crossing	63·21	795·72
	Approximate bed of C.P.R.	63·38	795·28
	Base of C.P.R. rail at crossing	64·29	794·38
	Approximate bed of C.P.R.	64·38	793·51
	Base of C.P.R. rail at crossing	65·37	793·02
	Approximate bed of C.P.R.	65·39	792·80
	Approximate bed of C.P.R.	66·38	792·69
	Base of C.P.R. rail at crossing	66·43	792·92
	Approximate bed of C.P.R.	67·38	792·64
	Approximate bed of C.P.R.	68·36	793·37
	Base of C. P.R. rail at crossing	68·56	794·27
	Base of C.P.R. rail at Dufrost Station	68·99	793·94
	Approximate bed of C.P.R.	69·39	791·63
	Approximate bed of C.P.R.	70·38	789·21
	Base of C.P.R. rail at crossing	70·59	789·84
	Approximate bed of C.P.R.	71·38	789·45
	Base of C.P.R. rail at crossing	71·60	788·99
	Approximate bed of C.P.R.	72·39	787·51
	Base of C.P.R. rail at crossing	72·62	787·76
	Approximate bed of C.P.R.	73·38	788·36
	Base of C.P.R. rail at crossing	73·63	787·38
	Approximate bed of C.P.R.	74·39	785·88

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MCCCCLXXIX.	Chisel line on end of copper bolt driven horizontally into foundation, S. end of W. wall of Arthur Hubert's frame house, E. side of track at Carey Stn.....	74·64	783·18
	Base of C.P.R. rail at crossing.....	74·64	785·79
	Base of C.P.R. rail at Carey Station.....	74·72	785·79
	Approximate bed of C.P.R.....	75·38	785·66
	Base of C.P.R. rail at crossing.....	75·66	787·62
	Approximate bed of C.P.R.....	76·38	785·69
	Base of C.P.R. rail at crossing.....	76·68	785·72
	Approximate bed of C.P.R.....	77·38	784·03
	Base of C.P.R. rail at crossing.....	78·19	783·21
	Base of C.P.R. rail at Otterburne Station.....	78·35	781·80
	Approximate bed of C.P.R.....	78·38	781·12
	Base of C.P.R. rail over Rat river.....	78·66	779·82
			
C. B.⊖M. MCCCCLXXX.	Top of copper bolt driven vertically into concrete coping W. and N. of abutment of C.P.R. bridge over Rat River at Otterburne.....	78·67	779·79
	Base of C.P.R. rail at crossing.....	78·77	780·08
	Base of C.P.R. rail at crossing.....	79·04	780·86
	Approximate bed of C. P.R.....	79·39	779·78
	Approximate bed of C.P.R.....	80·12	778·33
	Base of C.P.R. rail at crossing.....	80·80	778·56
	Approximate bed of C.P.R.....	81·82	777·88
	Base of C.P.R. rail at crossing.....	82·85	780·55
	Base of C.P.R. rail at crossing.....	83·86	777·43
	Base of C.P.R. rail at crossing	84·87	776·58

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MCCCCXCIII.	Chisel line on end of copper bolt driven horizontally into concrete foundation, W. end of N. wall of H. Roberts hotel at Niverville station, Manitoba	85·87	776·18
	Base of C.P.R. rail at Niverville Station	85·88	776·80
	Base of C.P.R. rail at crossing	86·91	775·15
	Base of C.P.R. rail at crossing	87·92	773·93
	Approximate bed of C.P.R.	88·82	774·09
	Base of C.P.R. rail at crossing	89·95	773·35
	Base of C.P.R. rail at crossing	90·97	772·22
	Base of C.P.R. rail at Williard station	91·96	771·88
	Base of C. P.R. rail at Williard crossing	91·98	771·87
	Base of C.P.R. rail at crossing	92·99	772·73
	Approximate bed of C.P.R.	93·83	772·42
	Approximate bed of C.P.R.	94·83	771·76
	Base of C.P.R. rail at crossing	95·87	773·19
	Approximate bed of C.P.R.	96·79	772·45
	Base of C.P.R. rail at Grande Pointe Stn.	97·51	769·68
	Base of C.P.R. rail at Grande Pointe crsg.	97·54	769·57
	Approximate bed of C.P.R.	97·82	767·56
	Base of C.P.R. rail at crossing	98·07	766·85
	Approximate bed of C.P.R.	98·81	765·01
	Base of C.P.R. rail at crossing	98·11	764·95
	Base of C.P.R. rail over Seine river	99·23	765·34
	Approximate bed of C.P.R.	99·82	765·66
	Approximate bed of C.P.R.	100·84	764·56
	Base of C.P.R. rail at crossing	101·57	765·11
	Approximate bed of C.P.R.	101·83	764·46
	Base of C.P.R. rail at crossing	102·30	764·78
	Approximate bed of C.P.R.	102·83	762·59
	Base of C.P.R. rail at crossing	103·37	761·56
	Approximate bed of C.P.R.	103·83	761·12
	Approximate bed of C.P.R.	104·81	760·76
	Base of C.P.R. rail at crossing	105·23	761·14
	Base of C.P.R. rail at crossing of C.N.Ry.	105·66	761·79

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

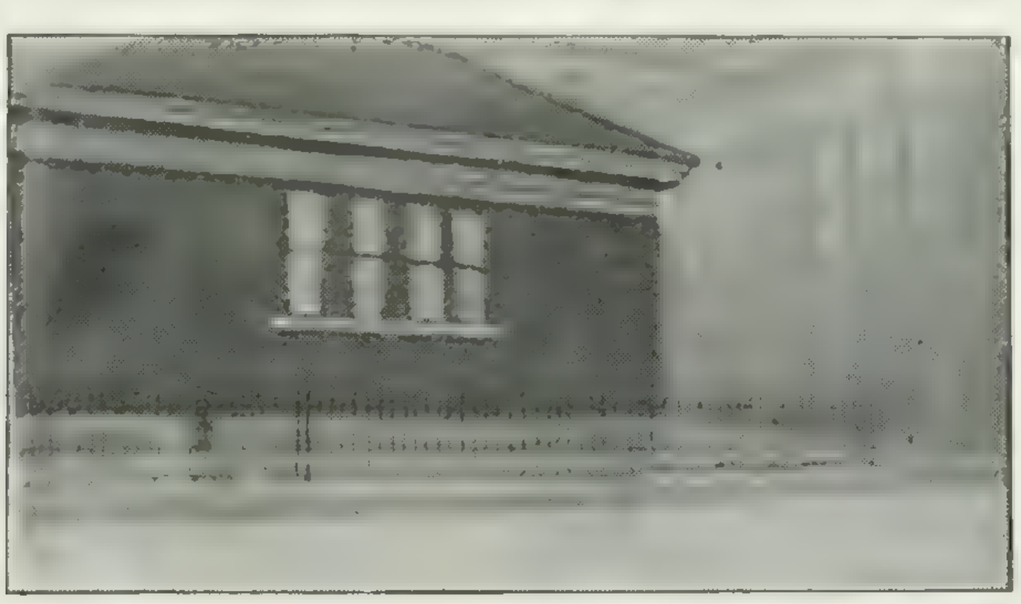
Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. CCCCXCII.	Chisel line on end of copper bolt driven horizontally into concrete base S.E corner of rear wall of Western Canada Flour Co.'s office, facing C.P.R. at crossing of C.N.Ry. at St. Boniface, Manitoba....	105·68	760·87
	Base of C.P.R. rail at street crossing.....	106·03	760·76
	Base of C.P.R. rail at St. Boniface Station.....	106·26	759·53
	Base of C.P.R. rail under G.T.P.Ry.....	106·45	759·86
	Base of G.T.P. rail over C.P.R.....	106·45	786·86
	Base of C.P.R. rail over centre of Red River.....	106·80	763·48
			
C. B.⊖M. MCCCCXCI	Chisel line on end of copper bolt driven horizontally into 2nd course from top, S. end face of W. abutment of C.P.R. bridge over Red River at Winnipeg.....	106·85	760·77
	Base of C.P.R. rail over Higgins Ave.....	107·11	762·24
	Base of C.P.R. rail over Anna Bella St.....	107·42	763·43
	Base of C.P.R. rail under G.T.P. Ry on W. bank of Red River.....	108·45	750·45

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MDIV.	Chisel line on end of copper bolt driven horizontally into base, centre of S.W. face of N. abutment of G.T.P. overhead crossing of C.P.R. on W. bank of Red River, Winnipeg	108·45	752·13
	Base of G.T.P. rail over York Ave	108·81	774·40
			
C. B.⊖M. MDV.	Chisel line on end of copper bolt driven horizontally into cut stone at N.E. corner of Canadian Northern Railway station at Winnipeg	108·89	776·12
	Concrete pavement opposite N.E. corner of C.N.Ry. station, W. side of tracks	108·89	773·77
	Approximate base of rail of G.T.P. opposite N.E. corner of C.N.Ry. station	108·89	772·95
	Centre of Main St., foot of Broadway	108·96	762·90
	Approximate level of centre of Main St. bridge over Assiniboine river	109·18	759·29
	Approximate zero of city engineer's gauge on Main St. bridge over Assiniboine river	109·18	728·04
	Water surface of Assiniboine river at city engineer's guage, September 29th, 1911	109·18	733·29

SESSIONAL PAPER No. 19

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MDVI.	Chisel line on end of copper bolt driven horizontally into E. face of S. abutment of Main St. bridge over Assiniboine river, Winnipeg.....	109·22	753·47
	Base of C.P.R. rail opposite Immigration office building E. end of C.P.R. yard.....	107·83	766·17
			
C. B.⊖M. MCCCCXC.	Chisel line on end of copper bolt driven horizontally into cut stone in N.E. corner of small Immigration office building, E. end of C.P.R. depot at Winnipeg.	107·83	768·00
	Base of C.P.R. rail opposite N.W. corner of Royal Alexandria Hotel, Winnipeg.....	107·96	766·34
			
C. B.⊖M. MCCCCXCVII	Chisel line on end of copper bolt driven horizontally into cut stone, N.W. corner of Royal Alexandria Hotel, facing track, Winnipeg.....	107·96	767·6

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
	S.W. corner of stone step, S. entrance to Royal Alexandra Hotel, facing Main St., Winnipeg	107·98	760·41
	Base of C.P.R. rail over Main St.	107·98	766·78
			
C. B.⊖M. MDIII.	Chisel line on end of copper bolt driven horizontally into 3rd stone course above ground, 15 ft. from N.W. corner, N. wall of City Hall building, Winnipeg	108·49	763·78
	N. end of lower stone step, N.E. entrance to Union Bank, facing on Main St., Winnipeg	108·70	760·91
	Base of C.P.R. rail under overhead crossing at Salter St.	108·55	762·57
			
C. B.⊖M. MCCCCXCVIII	Chisel line on end of copper bolt driven horizontally into base, W. end of S. face of pier, N. side of C.P.R. main track at overhead crossing of Salter St., Winnipeg	108·55	763·60

SESSIONAL PAPER No. 19

Descriptive List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MCCCCXCIX.	Chisel line on end of copper bolt driven horizontally into stone foundation, under window, S. face of C.P.R. roundhouse, Winnipeg	109·13	766·20
	Base of C.P.R. rail opposite roundhouse	109·13	764·43
	Base of C.P.R. rail under Arlington St. crossing	109·29	763·87
	Base of C.P.R. rail over McPhillips St. crossing	109·74	764·00
938.	+Cut on coping at S.W. corner of McPhilips St. crossing	109·75	763·11
	Approximate bed of C.P.R.	109·90	762·45
	Base of C.P.R. rail at McPhilips St. crossing	110·15	763·82
	Base of C.P.R. rail at Selkirk Ave	110·33	764·26
	Base of C.P.R. rail at Pritchard Ave	110·40	764·71
	Base of C.P.R. rail at Burrows Ave	110·57	764·64
	Base of C.P.R. rail at Aberdeen Ave	110·67	764·46
	Base of C.P.R. rail at College Ave	110·84	764·47
	Base of C.P.R. rail at Cathedral Ave	111·28	764·50
	Base of C.P.R. rail at Athele Ave	111·46	763·36
	Base of C.P.R. rail at Washington Ave	111·65	763·35
	Approximate bed of C.P.R.	111·85	762·25
	Base of C.P.R. rail at Pembroke crossing	112·05	761·78
	Base of C.P.R. rail at Hartford Ave	112·25	761·88
	Base of C.P.R. rail at Kildenan crossing	112·53	762·44
	Approximate bed of C.P.R.	112·83	760·35
	Base of C.P.R. rail at crossing	113·06	760·19
	Approximate bed of C.P.R.	113·84	759·69
	Base of C.P.R. rail at crossing	113·90	759·95
	Base of C.P.R. rail at crossing	114·60	758·55
	Approximate bed of C.P.R.	114·83	758·45
	Base of C.P.R. rail at crossing	115·06	758·01
	Approximate bed of C.P.R.	115·82	759·60
C. B.⊖M. MD.	Chisel line on end of copper bolt driven horizontally into centre of W. or front of small brick oil building, E. side of C.P.R., 200 ft. S. of Middle church station	116·17	758·26
	Base of C.P.R. rail at Middle church station	116·21	758·18
	Approximate bed of C.P.R.	116·84	759·89
	Approximate bed of C.P.R.	117·83	758·22
	Base of C.P.R. rail at crossing	118·01	758·01
	Approximate bed of C.P.R.	118·83	758·42
	Base of C.P.R. rail at crossing	119·09	758·01
	Approximate bed of C.P.R.	119·81	758·70
	Base of C.P.R. rail at Parkview station	120·53	759·80
	Base of C.P.R. rail at crossing	120·81	759·80
	Approximate bed of C.P.R.	121·88	762·48
	Base of C.P.R. rail at crossing	122·14	762·06
	Approximate bed of C.P.R.	122·87	762·30
	Base of C.P.R. rail at crossing	122·88	762·50

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued*.

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
	Base of C.P.R. rail at Victoria Park station	123·78	763·99
	Approximate bed of C.P.R.	123·84	763·53
	Base of C.P.R. rail at crossing	124·65	763·47
	Approximate bed of C.P.R.	124·84	763·00
	Coping—S. W. corner of St. Andrews lock	127·04	737·19
	Coping—S.E. corner of St. Andrews lock	127·04	737·20
	Coping—N.E. corner of St. Andrews lock	127·04	737·19
	Coping—N.W. corner of St. Andrews lock	127·04	737·16
	Figure 707—or top of board gauge above St. Andrews dam	127·04	737·13
	Water surface of Red river, upper side of St. Andrews lock, Sept. 28th, 1911	127·04	733·18



C. B.⊖M. MDI.	Chisel line on end of copper bolt driven horizontally into concrete, 8½ ft. from S. end W. end wall of St. Andrews dam and E. side of lock	127·04	737·97
	Figure 690—or top of board guage below St. Andrews dam	127·06	720·17
	Water surface of Red river, foot of St. Andrews lock, Sept. 28th, 1911	127·06	713·27
	Base of C.P.R. rail at crossing	125·61	762·15
	Approximate bed of C.P.R.	125·84	761·91
	Base of C.P.R. rail at crossing	126·51	760·84
	Approximate bed of C.P.R.	126·83	759·50
	Base of C.P.R. rail at Fort Garry station	127·28	758·22

SESSIONAL PAPER No. 19

DESCRIPTIVE List of most Important Permanent Bench Marks, etc—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M.R.6. at Stephen, Minn., U.S.	Feet above mean Sea Level.
			
C. B.⊖M. MDII.	Chisel line on end of copper bolt driven horizontally into 4th stone above ground S. side of main entrance to Fort Garry	127·48	760·52
	Approximate bed of C.P.R.	127·84	758·44
	Base of C.P.R. rail at crossing	128·71	757·14
	Approximate bed of C.P.R.	128·81	756·82
	Approximate bed of C.P.R.	129·75	751·44
	Base of C.P.R. rail at crossing	129·99	750·13
	Base of C.P.R. rail at crossing	130·57	746·32
	Base of C.P.R. rail at crossing	130·62	745·84
	Base of C.P.R. rail at Selkirk Junction	130·80	744·13
			
C. B.⊖M. MCCCCXCVI.	Chisel line on end of copper bolt driven horizontally into stone ,near corner of front wall or main street face of Selkirk Post Office Building	131·34	742·48
	Zero of board gauge on down stream end face of Public wharf at Selkirk west	131·78	709·73
	Water surface of Red River, at Selkirk West guage, 4pm., Sept. 25th, 1911	131·78	713·73
	Base of C.P.R. rail at street crossing	130·84	743·44
	Base of C.P.R. rail at street crossing	130·95	742·32
	Base of C.P.R. rail at post road crossing	131·73	741·10
	Approximate bed of C.P.R.	131·83	740·92
	Base of C.P.R. rail at crossing	132·25	741·32
	Approximate bed of C.P.R.	132·77	740·70
	Base of C.P.R. rail at crossing	133·55	741·27
	Approximate bed of C.P.R.	133·89	740·73
	Base of C.P.R. rail at crossing	134·26	739·84
	Approximate bed of C.P.R.	134·87	739·58
	Base of C.P.R. at rail crossing	135·23	739·77

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Mark.	Descriptions.	Miles from B.M.R. 6 at Stephen Minn. U.S.	Feet above mean Sea Level.
	Base of C.P.R. rail at crossing	135·89	740·53
	Base of C.P.R. rail at crossing	136·01	739·94
	Approximate bed of C.P.R.	136·86	739·82
	Base of C.P.R. rail at post road crossing	137·00	739·94
	Base of C.P.R. rail at crossing	137·27	739·56
	Approximate bed of C.P.R.	137·88	741·24
	Base of C.P.R. rail at crossing	138·41	742·19
	Base of C.P.R. rail at Clandeboye station	138·69	741·96
			
C. B.⊖M. MCCCCXCV.	Chisel line on end of copper bolt driven horizontally into stone foundation under E. end window of N. gable of C.P.R. sectionmans residence at Clandeboye station	138·72	743·19
	Approximate bed of C.P.R.	138·88	741·89
	Base of C.P.R. rail at crossing	139·43	738·34
	Approximate bed of C.P.R.	139·92	734·16
	Base of C. P.R. rail over Wavy Creek	140·28	729·83
	Base of C.P.R. rail at crossing	140·44	730·59
	Approximate bed of C.P.R.	140·88	729·25
	Base of C.P.R. rail at crossing	141·45	730·28
	Approximate bed of C.P.R.	141·94	730·73
	Base of C.P.R. rail at post road crossing	142·47	731·57
	Base of C.P.R. rail over Netley Creek	142·81	731·08
	Base of C.P.R. rail at St. Louis station	142·87	731·79
	Approximate bed of C.P.R.	143·75	732·63
	Approximate bed of C.P.R.	144·84	739·84
	Approximate bed of C.P.R.	145·90	737·42
	Base of C.P.R. rail at Netley station	146·38	740·39
	Base of C.P.R. rail at crossing	146·60	740·42
	Approximate bed of C.P.R.	146·89	735·57
	Base of C.P.R. rail at crossing	147·76	733·82
	Approximate bed of C.P.R.	147·88	736·08
	Approximate bed of C.P.R.	148·83	735·05
	Base of C.P.R. rail at post crossing	148·98	734·53
	Base of C.P.R. rail at Robinson spur line	149·88	728·71
	Approximate bed of C.P.R.	149·92	728·65
	Base of C.P.R. rail at post road crossing	150·25	730·93
	Approximate bed of C.P.R.	150·88	735·45
	Approximate bed of C.P.R.	151·88	727·54
	Base of C.P.R. rail at crossing	152·02	727·64
	Base of C.P.R. rail at Mallock station	152·49	727·82
	Approximate bed of C.P.R.	152·89	725·67
	Base of C.P.R. rail at crossing	153·06	725·34
	Base of C.P.R. rail at Whytewold station	153·55	727·00
	Approximate bed of C.P.R.	153·89	727·71
	Base of C.P.R. trail at Ponemah station	154·64	728·28
	Approximate leed of C.P.R.	154·88	726·19
	Base of C.P.R. rail at post road crossing	155·00	727·03

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Mark.	Description.	Miles from B.M.R.6 at Stephen, Minn., U.S.	Feet above mean Sea Level.
	Approximate bed of C.P.R.	155·87	721·57
	Base of C.P.R. rail at crossing	156·18	722·88
	Base of C.P.R. rail at crossing	156·50	725·46
	Base of C.P.R. rail at Winnipeg Beach station	156·75	727·46



C. B.○M. MCCCCXCIV.	Top of copper bolt driven vertically into concrete base, S.E. corner of C.P.R. water tank at Winnipeg Beach station	156·80	727·46
	Base of C.P.R. rail at crossing	157·03	730·96
	Base of C.P.R. rail at Park Ave. crossing	157·30	734·53
	Flooring—shore end of Government wharf at Winnipeg Beach	157·88	720·45
937	Top of snubbing post, S.W. outer end corner of Government wharf at Winnipeg Beach	157·88	721·99
	Flooring—outer end of Government wharf at Winnipeg Beach	157·88	720·38
	Zero of board gauge on S. side of Government wharf at Winnipeg Beach	157·88	710·55
	Water Surface of Lake Winnipeg at 11 a.m. September 12th, 1911	157·88	713·45

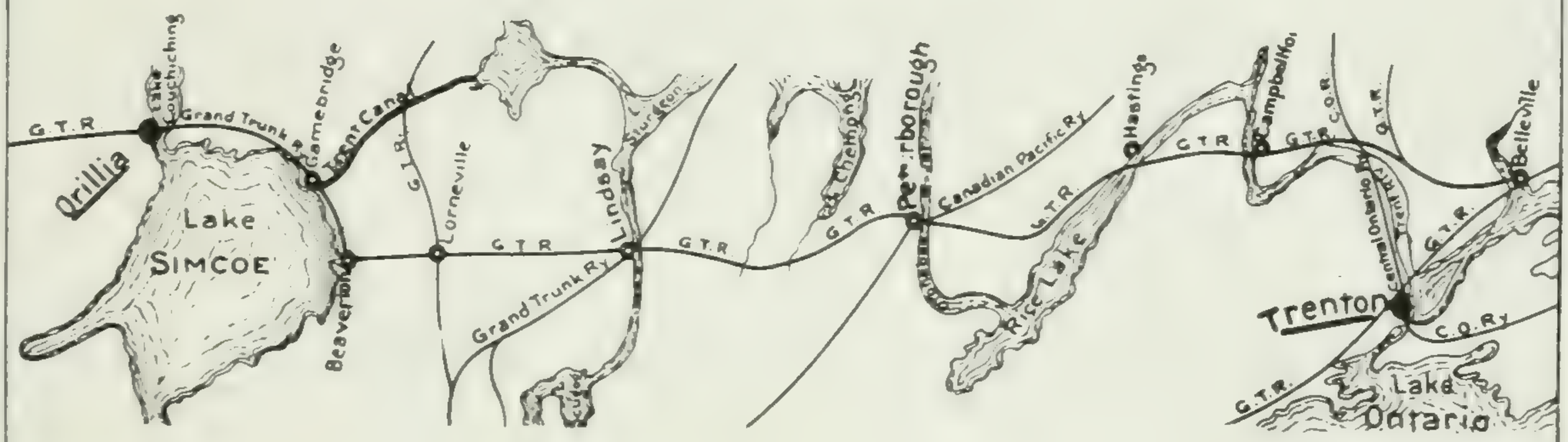
LIST OF PROMINENT BENCH MARKS, ETC.,

BETWEEN

TRENTON, ON LAKE ONTARIO, AND ORILLIA, ON LAKE COUCHICHING.

1908

SKELETON MAP
Showing
LINE OF PRECISE LEVELLING
Between
TRENTON, on Lake Ontario and ORILLIA, on Lake Couchiching.
— 1908 —



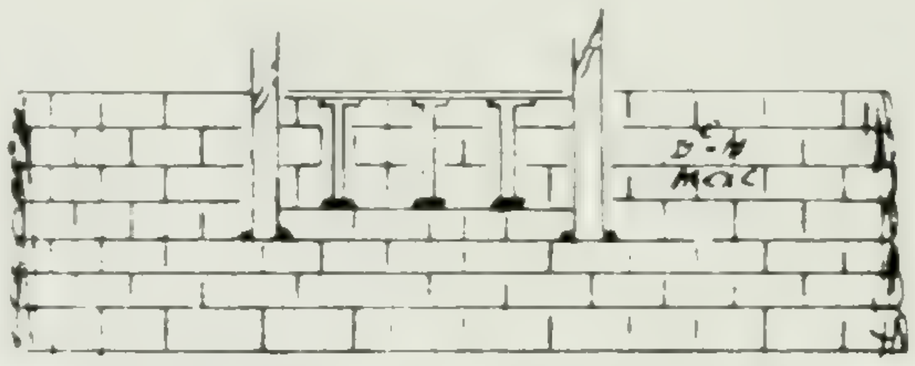
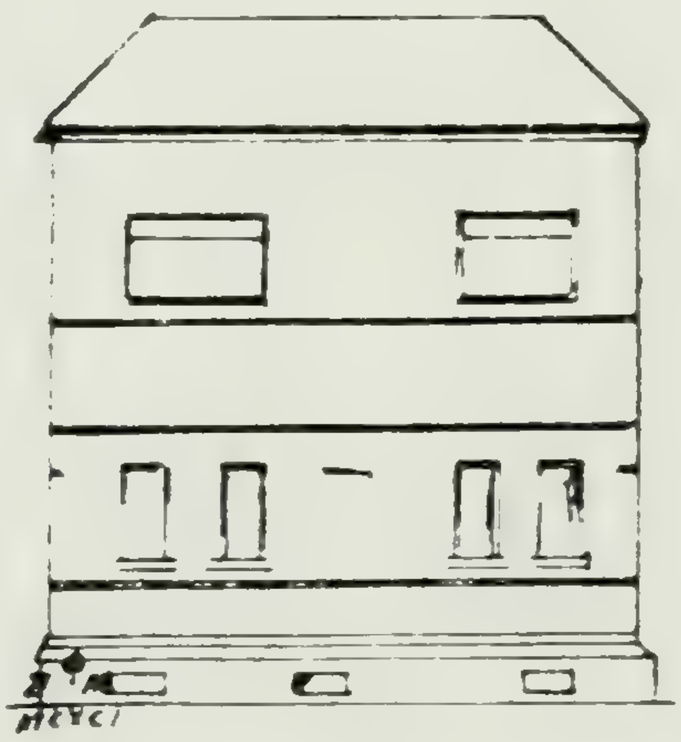
PROMINENT BENCHMARKS

B.M.		Feet above Datum
MCXC	On E end of N abutment of C.O.Ry bridge over Murray canal at Trenton, Ontario	252.85
MCXCI	On N. end of W. wall of Post Office building " " "	256.70
MCXCIX	On S E corner of G.T.R. overhead crossing of C.O.R. " Trenton Jct., "	284.72
MCXCII	On N. end of W. abutment of C.O.R. subway under G.T.R. " " " "	265.77
MCXCIV	On W end of S. face of G.T.R. culvert, 550 ft E of mile post 236½ from Montreal, Que	334.24
MCXCV	On S end of E wall of G.T.R. culvert 815 ft. W. of mile post 238 " " "	302.03
MCXCVI	On W end of S face of G.T.R. culvert, 1120 ft W of mile post 239½ " " "	290.43
MCXCVII	On N. end of E. wall of G.T.R. culvert, 1670 ft W. of mile post 241 " " "	307.77
MCXCVIII	On rock in field, 400 ft from lake shore, some 800 ft W of wharf at Brighton, Ontario	256.73
MCXCIII	On N. face of W abutment of G.T.R. bridge over Trent river at Trenton Jct.	277.15
MCC	On top course, W. face of C.O.R. culvert, 1234 ft S. of mile post 34 from Picton, Ontario	306.57
MCCI	On S. end of W. face of C.O.R. culvert, 700 ft N of mile post 35 " " "	305.88
MCCII	On S end of E face of C.O.R. culvert, 135 ft S of mile post 37 " " "	345.54
MCCIII	On W face of S. abutment of C.O.R. bridge over Cold brook at Frankfort "	362.86
MCCIV	On S. end of W face of C.O.R. culvert, 1360 ft N of mile post 41 from Picton, Ontario	370.22
MCCV	On E face of N abutment of C.O.R. bridge over Trent river at Glen Ross, "	371.31
MCCVI	On N. end of W face of C.O.R. culvert, 1564 ft N. of mile post 45 from Picton, Ontario	393.69
MCCVII	On W end face of S. abutment of C.O.R. culvert over brook 990 ft S. of mile post 46 "	394.34
MCCVIII	On S.W. base of rock, 37 ft N of G.T.R. 330 ft E of White's crossing, E of Campbellford, "	505.14
MCCIX	On base between 1st and 2nd window from front, S. side of R.C. Church at " "	531.33
MCCX	On S. face of E abutment of G.T.R. bridge over Trent river, at Campbellford, "	489.88
MCCXX	On N. face of large boulder, 36 ft S. of G.T.R., 204 ft E of mile post 41 from Belleville "	634.01
MCCXIX	On S.W. face of large boulder, 16 ft N. of G.T.R., 970 ft W " " " 42 " " "	620.78
MCCXVIII	On W. face of S abutment of highway bridge over Trent River at Hastings, "	616.24
MCCXVII	On S. face of W abutment of G.T.R. bridge over Trent River " " "	629.14
MCCXVI	On top of boulder, N. side of G.T.R. and 270 ft. W. of mile post 46 from Belleville, "	635.08
MCCXV	On E face of boulder, 17 ft S of G.T.R and 200 ft. W of Blezand's station "	714.91
MCCXIV	On N face of boulder, in N. fence line, 614 ft E of mile post 54 from Belleville, "	684.13
MCCXIII	On top of rock, in N. fence line of G.T.R., 1000 ft E of Keene's station "	625.30
MCCXII	On S. face of W abutment of G.T.R. bridge over E branch of Otonabee river at Peterborough	632.99
MCCXI	On coping, S side of W. abutment of G.T.R bridge over W " " " "	634.59
MCCXXI	On N. face of E abutment of C.P.R. bridge over " " " "	632.03
MCCXXII	On base, S face of W tower of Lift Lock of Trent Canal at "	637.17
MCCXXIII	On W base of boulder in N. fence line of G.T.R., 650 ft W of mile post 66½ from Belleville, Ontario	695.33
MCCXXIV	On E. end of S. face of G.T.R. culvert opposite " " 71 " " "	806.19
MCCXXV	On N face of E abutment of G.T.R. bridge over small brook at 74½ " " "	888.20
MCCXXVI	On N face of E abutment of G.T.R. bridge over Scugog river at Lindsay, "	855.18
MCCXXVII	On N W corner of Post Office building at Lindsay, "	855.80
MCCXXVIII	On N W. corner of Mr Fuller's residence opposite Cambray Station, "	872.46
MCCXXXIV	On S face of rock, 13 ft S of G.T.R. and 790 ft W of mile post 95 from Belleville, "	925.29
MCCXXXIII	On W. brick wall of small oil shed, N. side of G.T.R., 320 ft E of Lorneville Jct diamond	893.56
MCCXXXII	On S.E. corner of G.T.R. overhead crossing of C.N.R. at Gamebridge "	748.20
MCCXXXI	On N face of large boulder W. side of G.T.R. and 100 ft N of " Station "	799.68
MCCXXX	On E face of large boulder E. side of G.T.R. and 675 ft N. of Brechen Station "	738.72
MCCXXIX	On N face of boulder, 84 ft E of G.T.R. in Mr Boyle's field, and 1020 ft S.E. of mile post 123 "	734.04
DCLXXXVIII	On N.E. corner of G. Vick's grist mill and elevator, foot of Tecumseh St., Orillia, Ont.	731.05

Datum. Mean Sea level of Atlantic Ocean.

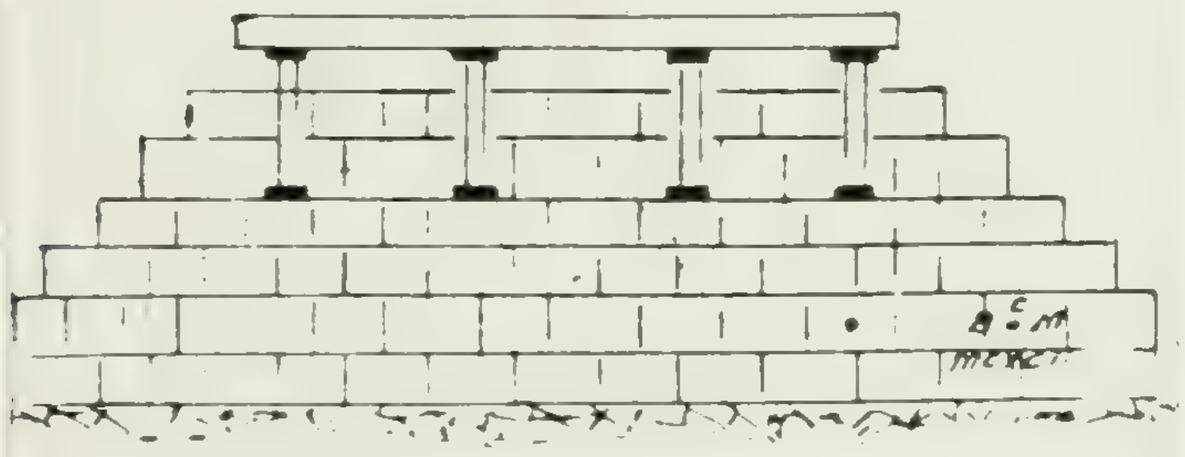
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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

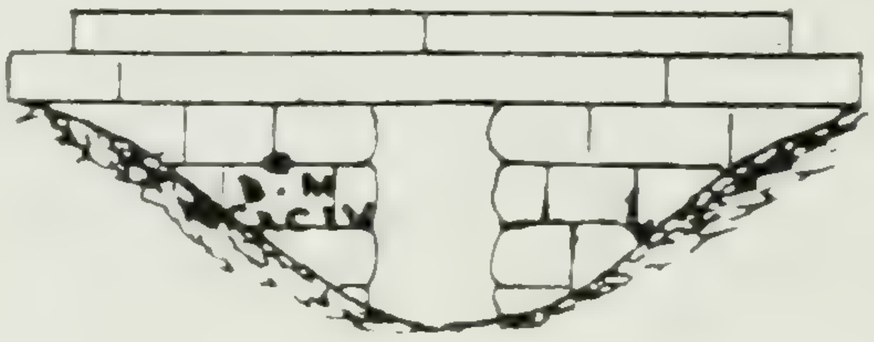
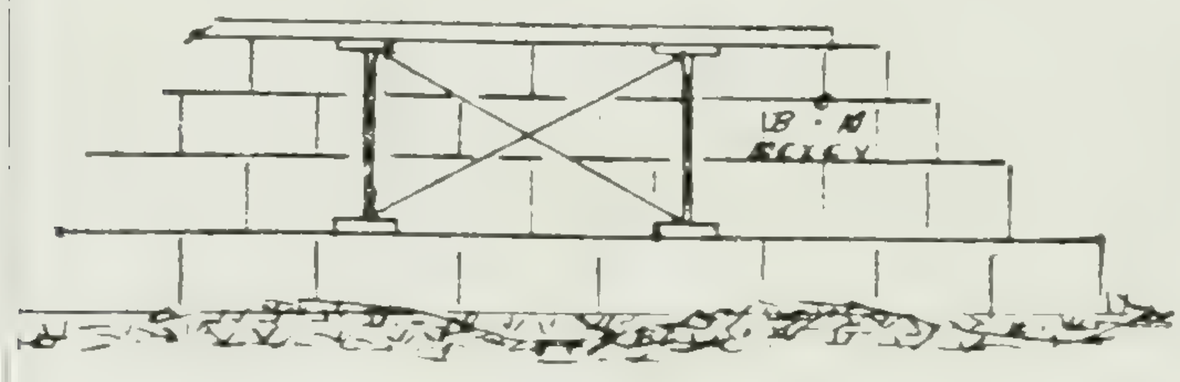
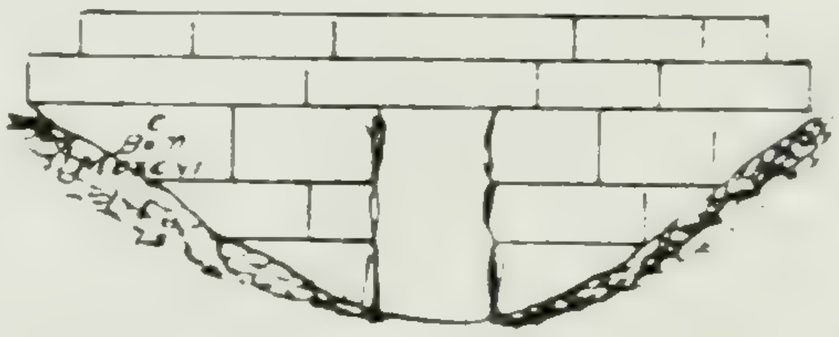
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
			
C. B.⊖M. MCXC	Chisel line on end of copper bolt driven horizontally into 2nd course from top, E. end of N. abutment of C.O. Ry. bridge over Murray canal at Trenton, Ont.....	·00	252·85
	Base of C.O.Ry. rail over Murray canal.....	·00	255·65
	Base of C.O.Ry rail at post road crossing.....	·76	252·41
	Approximate bed of C.O.Ry.....	1·00	258·33
	Approximate bed of C.O.Ry.....	2·02	260·41
	Base of C.O.Ry rail at road crossing.....	2·13	263·50
	Base of C.O.Ry. rail at road crossing.....	2·74	256·99
	Approximate bed of C.O.Ry.....	2·99	255·13
	Base of C.O.Ry. rail at road crossing.....	3·35	257·40
	Base of C.O.Ry. rail at Trenton station.....	3·59	256·39
	Base of C.O.Ry. rail at Dundas St. crossing.....	3·61	257·03
			
C. B.⊖M. MCXCI	Chisel line on end of copper bolt driven horizontally into 3rd course above ground, N. end of W. wall of Trenton Post Office building.....	3·74	256·70
859	+Cut on seat, upstream end of W. abutment of swing bridge over Trent river, foot of Dundas St.....	3·86	254·58
	Flooring, centre of swing bridge over Trent river.....	3·88	258·08
	W.S. of Trent river, under bridge, 8 a.m. Oct. 15th, 1908.	3·88	246·78
	Base of C.O.Ry. rail at Ridgeway St. crossing.....	3·72	257·93
	Base of C.O.Ry. rail at Joseph St. crossing.....	3·86	258·15
	Base of C.O.Ry. rail at street crossing.....	3·92	258·31
	Base of C.O.Ry. rail at street crossing.....	4·01	258·39
	Base of C.O.Ry. rail at street crossing.....	4·04	258·36
	Base of C.O.Ry. rail at street crossing.....	4·11	257·54
	Base of C.O.Ry. rail at street crossing.....	4·16	257·01
	Base of C.O.Ry. rail at street crossing.....	4·22	258·30
	Base of C.O.Ry. rail, Holland St. crossing.....	4·34	259·74

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

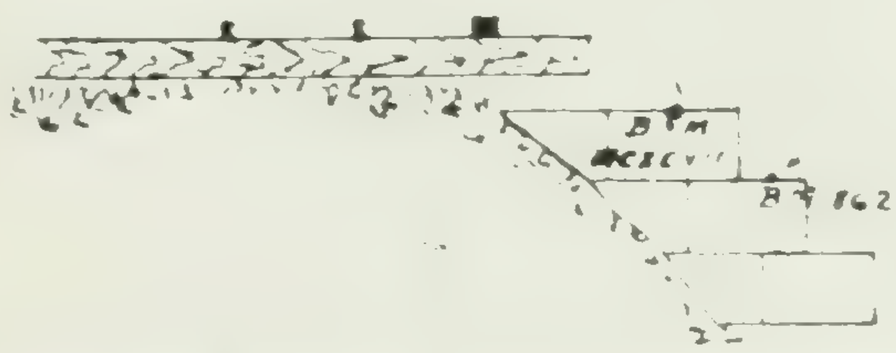
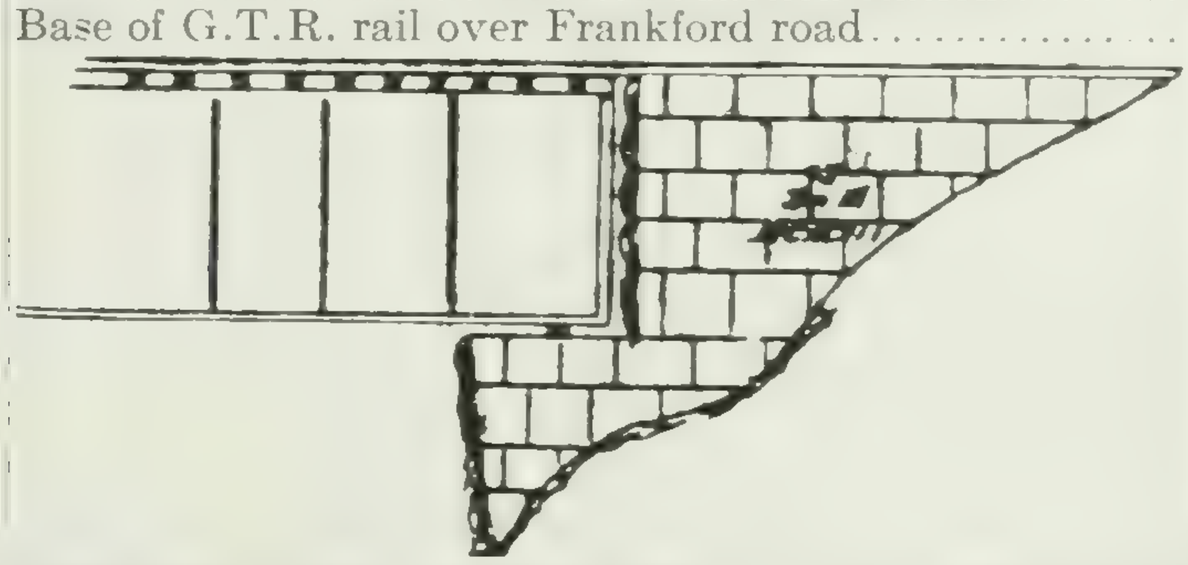
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
860	Copper bolt driven vertically into concrete block, 38 ft. E. of main road, N. corner of Holland St., Trenton..	4·41	251·67
	Base of C.O.Ry. rail at main road crossing.....	4·57	258·95
	Base of C.O.Ry. rail at main road crossing.....	4·79	261·45
	Approximate bed of C.O.Ry.....	4·96	264·62
	Base of C.O.Ry. rail at road crossing.....	5·05	264·19
			
C. B.⊖M. MCXCIX.	Chisel line on end of copper bolt driven horizontally into E. face of top course, S.E. corner of G.T.R. overhead crossing of C.O.Ry. at Trenton Junction, Ont.....	5·13	284·72
	Base of C.O.Ry. rail under G.T.R. at Trenton Junction..	5·14	263·12
			
C. B.⊖M. MCXCII.	Chisel line on end of copper bolt driven horizontally into 2nd course above ground, E. face of N. end of W. abutment of G.T.R. overhead crossing of C.O.Ry. at Trenton Junction, Ont.....	5·14	265·77
	Base of G.T.R. over C.O.Ry. at Trenton Junction.....	5·14	285·96
	BRANCH LINE TO BRIGHTON WHARF.		
	Base of G.T.R. rail over main road.....	5·37	285·82
	Base of G.T.R. rail at road crossing.....	5·93	299·67
	Base of G.T.R. rail at road crossing.....	6·49	330·88
	Base of G.T.R. rail under road bridge.....	6·77	340·87
	Base of G.T.R. rail at road crossing.....	7·05	347·54
	Base of G.T.R. rail at road crossing.....	7·56	346·48
	Base of G.T.R. rail at road crossing.....	8·06	347·80

DESCRIPTIVE List of most Important Permanent Bench Marks, etc—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
			
C. B.⊖M. MCXCIV.	Chisel line on end of copper bolt driven horizontally into 4th course from top, W. end of S. face of G.T.R. culvert, 550 ft. E. of mile-post 236½	8·65	334·24
	Base of G.T.R. rail opposite B.M. MCXCIV	8·65	339·76
	Base of G.T.R. rail at road crossing	8·73	339·79
	Base of G.T.R. rail at post road crossing	8·92	341·57
	Base of G.T.R. rail at post road crossing	9·28	328·84
	Base of G.T.R. rail at post road crossing	9·84	316·25
	Approximate bed of G.T.R.	10·01	311·95
	Base of G.T.R. rail at road crossing	10·24	308·09
	Base of G.T.R. rail at road crossing	10·39	306·01
			
C. B.⊖M. MCXCV.	Cnisel line on end of copper bolt driven horizontally into 2nd course from top, S. end of W. face of G.T.R. bridge culvert 815 ft. W. of mile-post 238-96	10·40	302·03
	Base of G.T.R. rail opposite B.M. MCXCV	10·40	305·92
	Base of G.T.R. rail at road crossing	10·67	307·05
	Base of G.T.R. rail at road crossing	10·95	303·57
	Base of G.T.R. at post road crossing	11·29	307·28
			
C. B.⊖M. MCXCVI.	Chisel line on end of copper bolt driven horizontally into 3rd course from top, W. end of S. face of G.T.R. culvert, 1120 ft. W. of mile-post 239½	11·95	290·43
	Base of G.T.R. rail opposite B.M. MXCCVI	11·95	296·05
	Base of G.T.R. rail at road crossing	12·04	295·91
	Base of G.T.R. rail at road crossing	12·55	310·29
	Approximate bed of G.T.R.	12·96	320·64
	Base of G.T.R. rail at road crossing	13·05	319·27

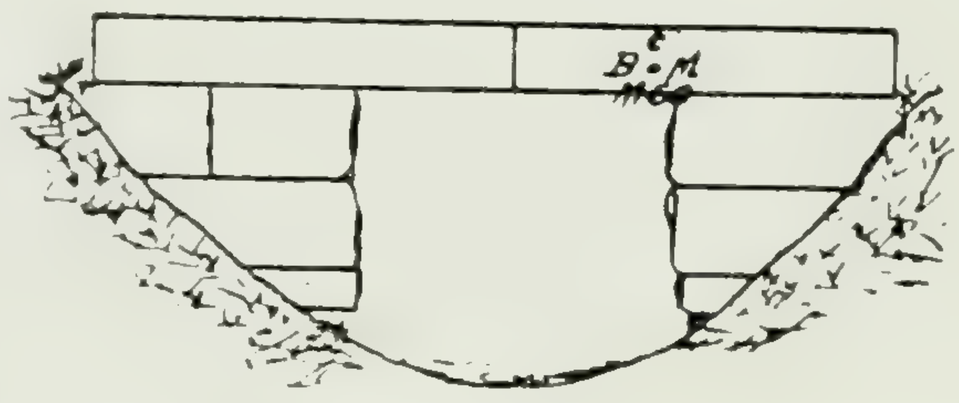
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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

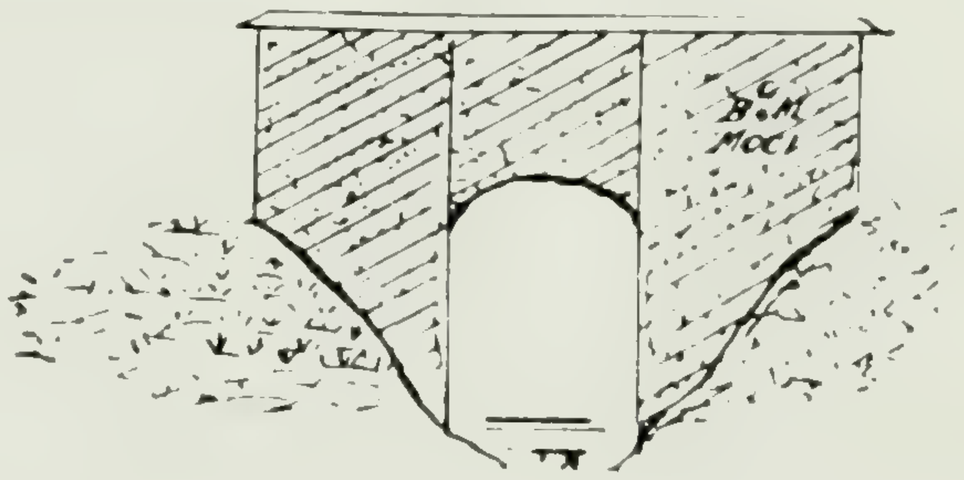
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C. B.⊖M. MCXCVII.	Chisel line on end of copper bolt driven horizontally into top course, E. face of N. end of E. wall of G.T.R. culvert, 1670 ft. W. of mile-post 241-93	13·55	307·77
862	+Cut on coping, N. end of E. wall of G.T.R. culvert. 1670 ft. W. of mile-post 241-93	13·55	306·25
	Base of G.T.R. rail opposite B.M. MCXCVII	13·55	307·99
	Base of G.T.R. rail, Prince Edward St., Brighton	13·82	306·49
	Centre of Prince Edward St. to Brighton wharf	14·05	289·21
	Centre of street towards Brighton wharf	14·89	253·41
	Water surface of Lake Ontario at 7·30 a.m. October 19th. 1908, Brighton wharf, Ont	15·50	246·37
			
C. B.⊖M. MCXCVIII.	Top of steel bolt driven vertically into embedded rock. some 400 ft. from Lake Ontario, and 800 ft. W. o wharf at Brighton, Ont	15·63	256·73
	BRANCH LINE FROM TRENTON JUNCTION TOWARDS TRENTON RIVER.		
	Base of G.T.R. rail over C.O.Ry. at Trenton Junction	5·14	285·96
	Base of G.T.R. rail at Trenton Junction station	5·17	285·63
	Base of G.T.R. rail over Frankford road	5·31	283·83
			
C. B.⊖M. MCXCIII.	Chisel line on end of copper bolt driven horizontally into 3rd course from top, W. end of N. face of W. abutment of G.T.R. bridge over Trenton river at Trenton Junction	5·79	277·15
861	Copper bolt driven vertically into seat, up-stream end of W. abutment of G. T. R. bridge over Trenton river Trenton Junction	5·79	269·78

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
	Base of G.T.R. rail over Trenton river, Trenton Jct.	5·80	284·37
	Water surface of Trenton river, under G.T.R. bridge at 4 p.m. October 15th, 1908, Trenton Jct., Ont.	5·80	260·07
874	Copper bolt driven vertically into concrete block, W. side of Frankfort road, some 550 feet N. of G.T.R. bridge over Trenton river, Trenton Jct.	5·90	265·66
875	Copper bolt driven vertically into concrete block, W. side of Frankfort road, lower side of Dam No. 1.	6·46	284·48
876	Copper bolt driven vertically into concrete block, W. side of Frankfort road, upper side of Dam No. 1.	6·61	287·02
	Approximate bed of C.O.Ry.	5·97	304·19
	Base of C.O.Ry. rail at main road crossing.	6·15	309·30
	Base of C.O.Ry. rail at main road crossing.	6·52	312·44



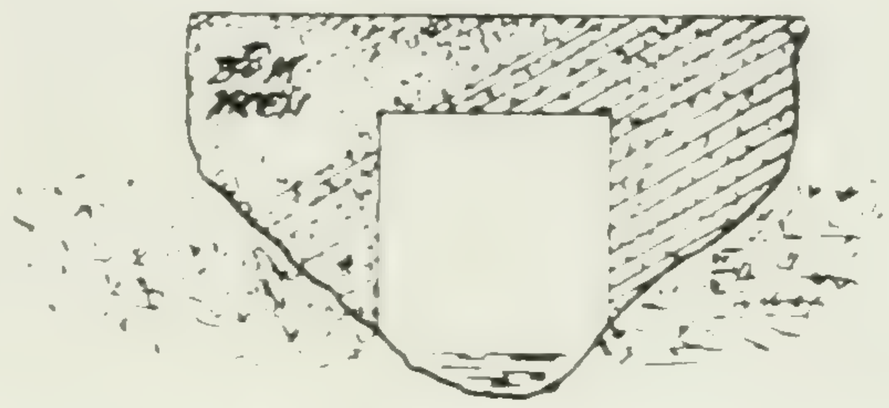
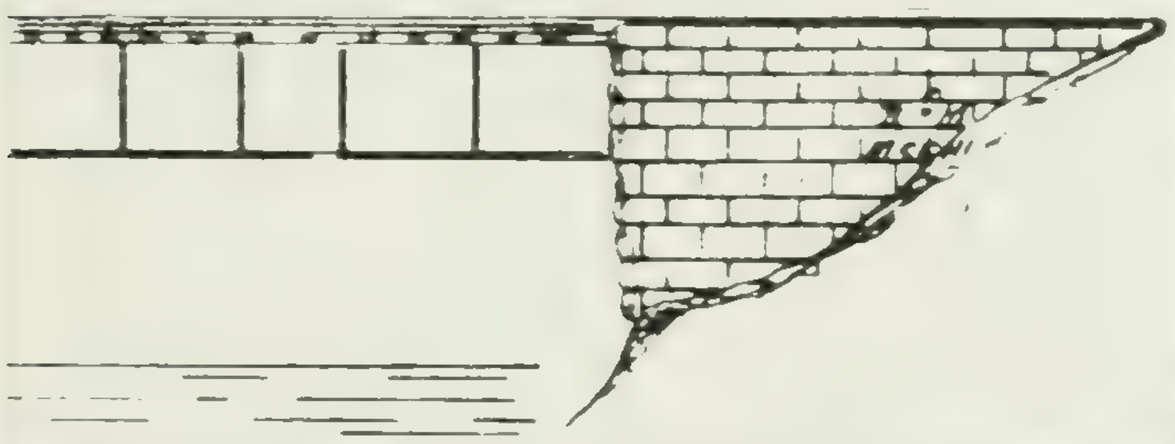
C. B.⊖M. MCC.	Chisel line on end of copper bolt driven horizontally into centre of top course, of W. end face of C.O.Ry. culvert, 1225 feet of S. mile-post 34.	6·74	306·57
	Base of C.O. Ry. rail opposite B.M. MCC.	6·74	307·62
	Approximate bed of C.O.Ry.	7·06	321·03



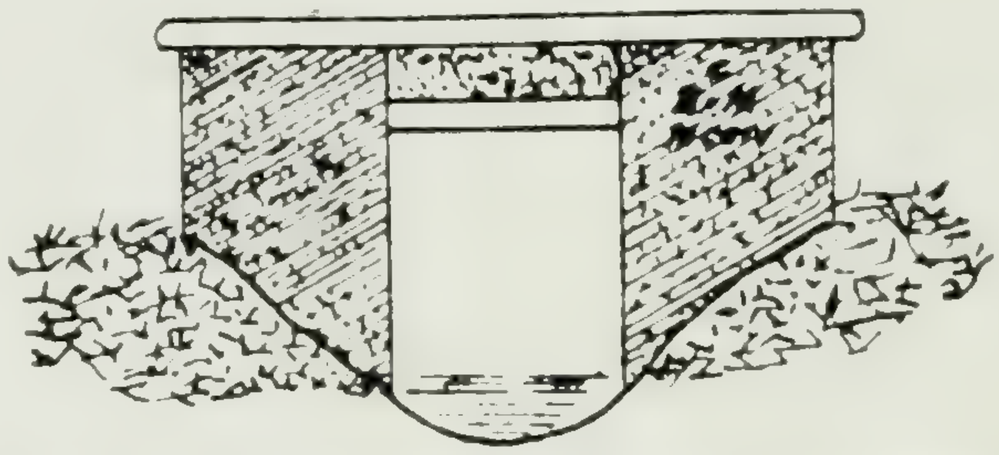
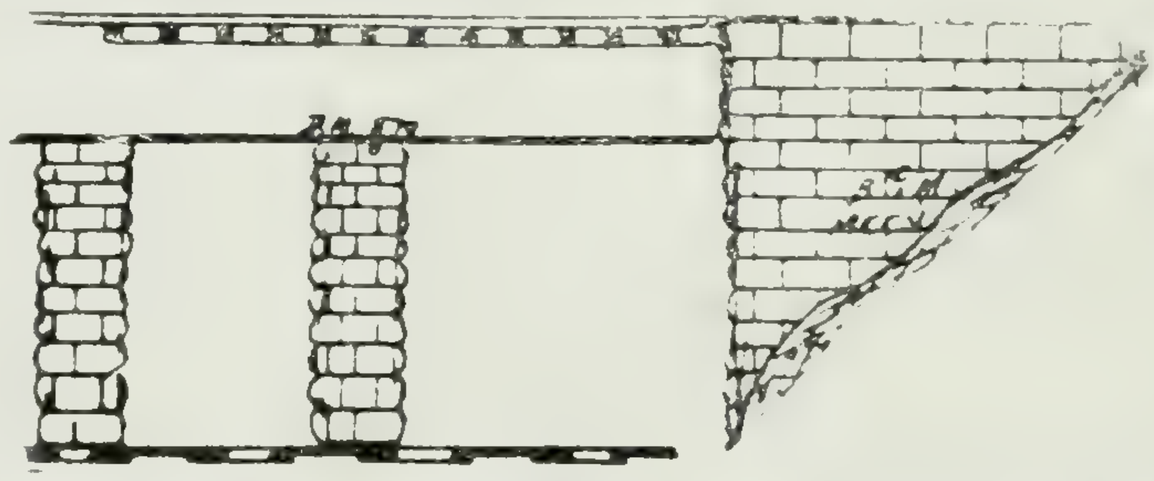
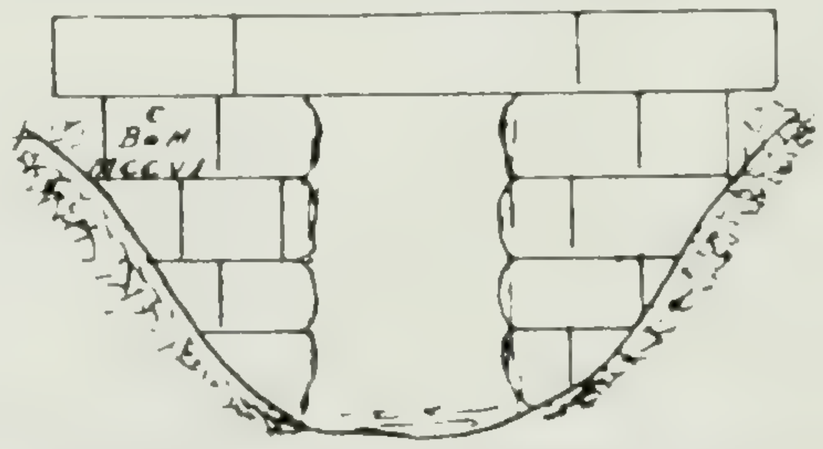
C. B.⊖M. MCCI.	Chisel line on end of copper bolt driven horizontally into S. end of W. face of C.O.Ry. culvert, S. side of crossing, 700 feet N. of mile-post 35.	8·10	305·88
	Base of C.O.Ry. rail opposite B.M. MCCI.	8·10	307·67
	Base of C.O.Ry. rail at road crossing.	8·11	307·60
872	Copper bolt driven vertically into concrete block, W. side of Frankfort road, lower side of Dam No. 3 of Trent Canal.	8·71	313·14
873	Copper bolt driven vertically into concrete block, W. side of Frankfort road, upper side of Dam No. 3 of Trent Canal.	8·76	316·23
	Approximate bed of C.O.Ry.	8·96	326·56
863	Copper bolt vertically driven into concrete block, W. side of Frankfort road, lower side of Dam No. 4 of Trent Canal.	9·22	329·87
864	Copper bolt driven vertically into concrete block, W. side of Frankfort road, upper side of Dam No. 4 of Trent Canal.	9·26	330·85

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

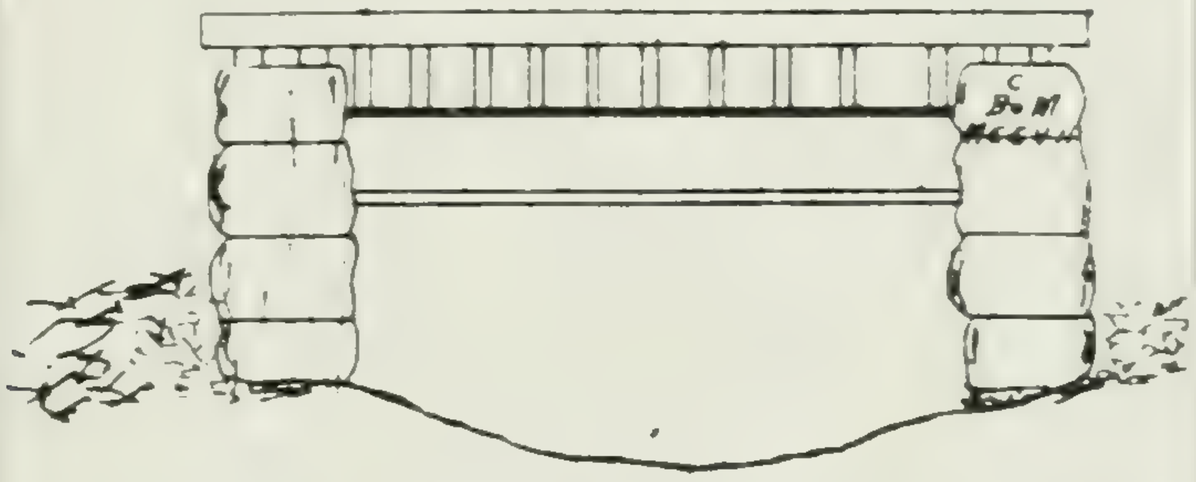
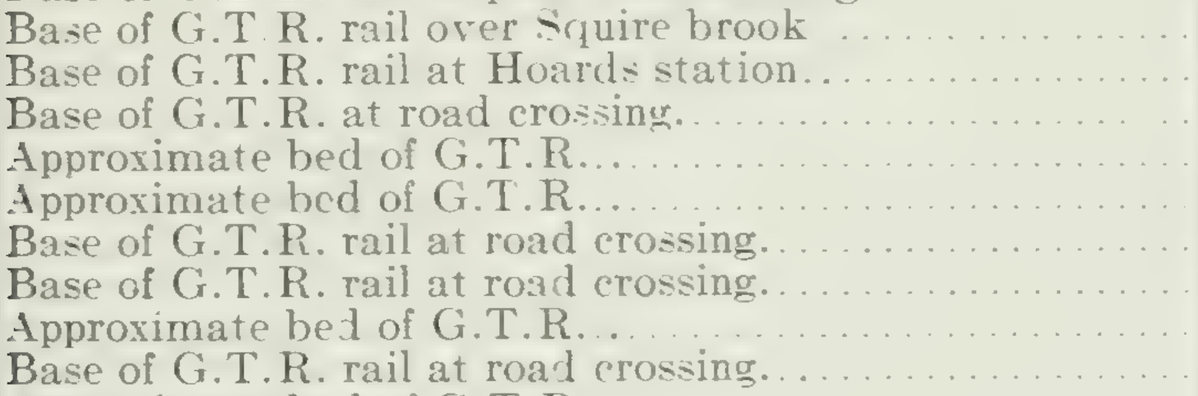
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C. B.⊖M. MCCII.	Chisel line on end of copper bolt driven horizontally into S. end of E. face of C.O.Ry. culvert, S. side of crossing, 135 ft. S. of mile-post 37	9·93	345·54
	Base of C.O.Ry. rail opposite B. M. MCCII	9·93	346·34
	Base of C.O.Ry. rail at road crossing	9·94	346·32
865	Copper bolt driven vertically into concrete block, E. side of Frankfort road, lower side of Dam No. 5, Trent Canal	10·58	348·94
866	Copper bolt driven vertically into concrete block, E. side of Frankfort road, upper side of Dan No. 5, of Trent Canal	10·58	350·35
	Approximate bed of C.O.Ry	10·96	363·82
	Base of C.O. Ry. rail at road crossing	11·04	365·37
			
C. B.⊖M. MCCIII.	Chisel line on end of copper bolt driven horizontally into 4th course from top, W. face of S. abutment of C. O. Ry.bridge over Cold brook, Frankfort	11·09	362·86
	Base of rail, centre of bridge over Cold brook	11·10	366·25
	Base of C.O.Ry. rail at road crossing	11·24	368·22
	Base of C.O.Ry. rail at road crossing	11·31	368·48
	Base of C.O.Ry. rail at main road crossing	11·41	370·09
	Base of C.O.Ry. rail at Frankfort station	11·42	369·89
	Base of C.O.Ry. rail at road crossing	11·77	380·03
	Base of C.O.Ry. rail at road crossing	11·90	380·52
	Approximate bed of C.O.Ry	12·03	377·69
867	Copper bolt driven vertically into concrete block, E. side of Frankfort road, S. corner of private road to Sills Island, Frankfort	12·11	358·16
868	Copper bolt driven vertically into concrete block, foot of cedar tree, 200 feet from S. end of Sills Island, Frankfort	12·31	354·05
	Base of C.O.Ry. rail at road crossing	12·23	373·88
	Base of C.O.Ry. rail at road crossing	12·30	373·60
869	+ Cut on centre of coping, E. end wall of C.O.Ry. culvert 915 feet S. of mile-post 40	12·77	371·01
	Base of C.O.Ry. rail opposite B.M. 869	12·77	371·21
	Base of C.O.Ry. rail at road crossing	13·34	375·12

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

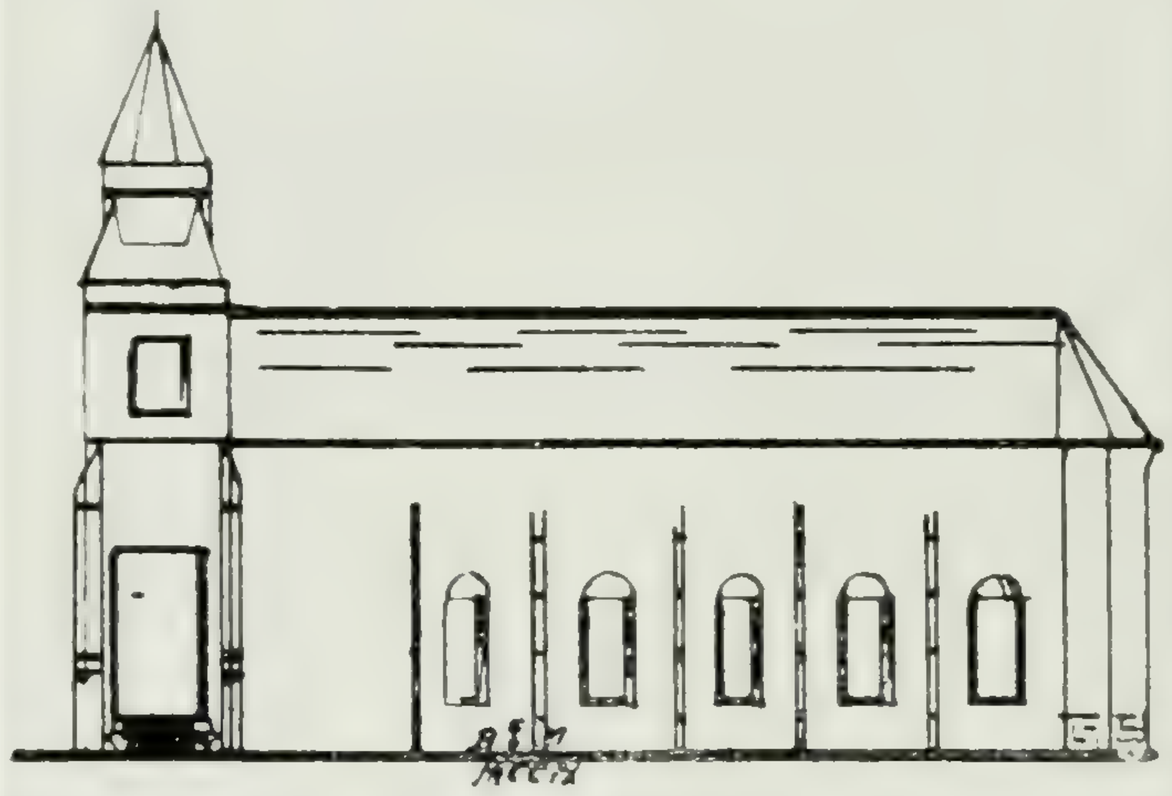
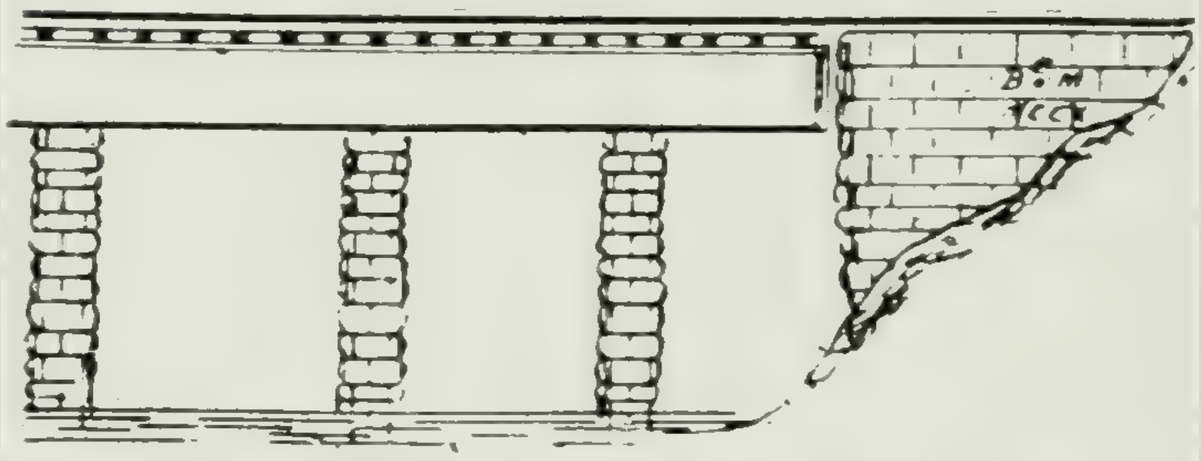
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C. B.⊖M. MCCIV.	Chisel line on end of copper bolt driven horizontally into S. end of W. face of C. O. Ry. culvert, 1,360 feet N. of of mile-post 41	14·20	370·22
	Base of C.O.Ry. rail opposite B. M. MCCIV	14·20	370·35
	Base of C.O.Ry. rail at road crossing	14·74	379·22
	Base of C.O.Ry. rail at road crossing	15·02	381·37
	Base of C.O.Ry. rail at road crossing	15·28	380·45
	Base of C.O.Ry. rail at road crossing	15·88	389·83
	Centre of C.O.Ry. bridge over Trent river, Glen Ross	16·49	381·17
870	Copper bolt driven vertically into coping downstream end of 1st pier from N. end of C.O.Ry. bridge over the Trent river at Glen Ross	16·53	376·43
			
B.⊖M. MCCV.	Chisel line on end of copper bolt driven horizontally into 8th course from top, E. face of N. abutment of C. O. Ry. bridge over Trent river at Glen Ross, Ont	16·54	371·31
871	Copper bolt driven vertically into coping, down stream S. end of N. abutment of Dam No. 7, Trent Canal, Glen Ross	16·89	376·14
	Base of C.O.Ry. rail, bridge over Trent Canal	16·63	381·75
	Base of C.O.Ry. rail at Glen Ross station	16·75	386·21
	Base of C.O.Ry. rail at road crossing	17·94	396·64
			
C. B.⊖M. MCCVI.	Chisel line on end of copper bolt driven horizontally into 2nd course from top, N. end of W. wall of C. O. Ry. culvert, 1,564 feet N. of mile-post 45	18·21	393·69
	Base of C.O.Ry. rail opposite B.M. M.CCVI	18·21	394·88
	Base of C.O.Ry. rail at road crossing	18·40	395·04

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

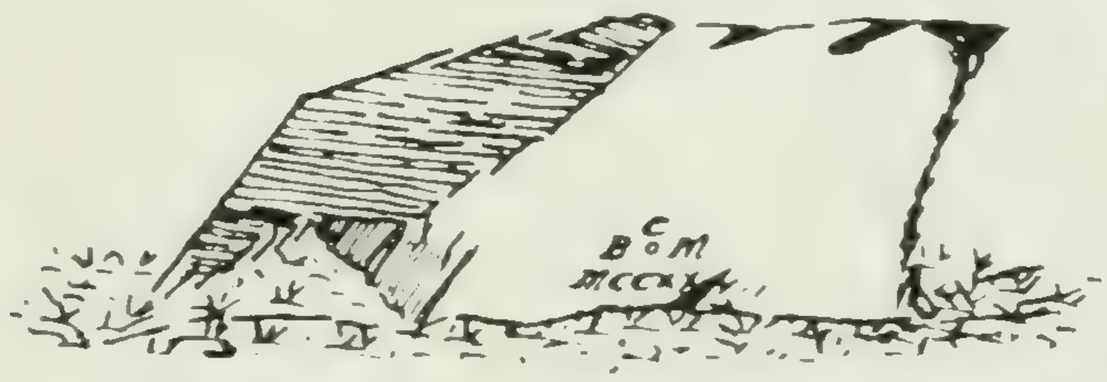
Bench Marks	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above m an Sea Level.
			
C. B.⊖M. MCCVII.	Chisel line on end of copper bolt driven horizontally into top course, W. end of S. abutment of C. O. Ry. bridge culvert over brook	18·72	394·34
	Base of C.O.Ry. rail opposite B.M. MCCVII	18·72	395 23
	Base of C.O.Ry. rail, crossing of G.T.R.	18·91	396·87
	Base of G.T.R. rail at road crossing	19·23	406·40
	Base of G.T.R. rail at road crossing	19·39	416·18
	Base of G.T.R. rail at road crossing	19·45	421·23
	Approximate bed of G.T.R.	20·02	22·31
	Base of G.T.R. rail at road crossing	20·80	397·20
	Approximate bed of G.T.R.	22·00	383·50
	Base of T.G.R. rail at road crossing	22·14	383·35
	Base of G.T.R. rail at post road crossing	22·30	386·71
	Base of G.T.R. rail over Squire brook	22·43	381·85
	Base of G.T.R. rail at Hoards station	22·62	382·79
	Base of G.T.R. at road crossing	22·84	391·81
	Approximate bed of G.T.R.	22·95	392·78
	Approximate bed of G.T.R.	24·01	405·24
	Base of G.T.R. rail at road crossing	24·40	416·03
	Base of G.T.R. rail at road crossing	25·35	459·03
	Approximate bed of G.T.R.	25·97	469·81
	Base of G.T.R. rail at road crossing	26·49	469·17
	Approximate bed of G.T.R.	27·04	485·19
			
C. B.⊖M. MCCVIII	Chisel line on end of copper bolt driven horizontally into base of solid rock, 37 feet N. of G.T.R. and 330 feet E. of White's crossing	27·29	505·14
	Base of G.T.R. rail opposite B.M. MCCVIII	27·29	495·30
	Base of G.T.R. rail at White's crossing	27·35	497·46
	Base of G.T.R. rail at road crossing	28·38	529·99
	Base of G.T.R. rail at crossing	28·67	524·57

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

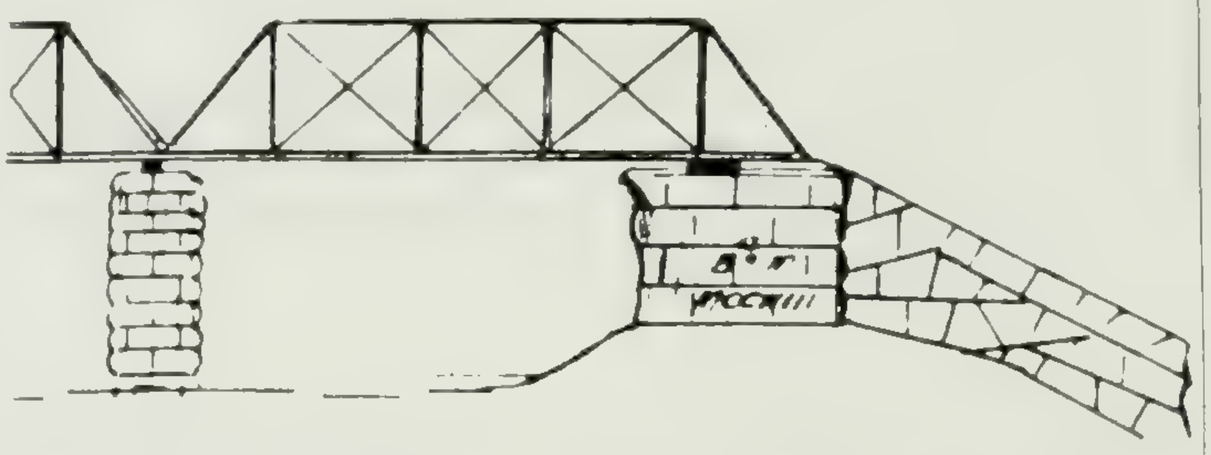
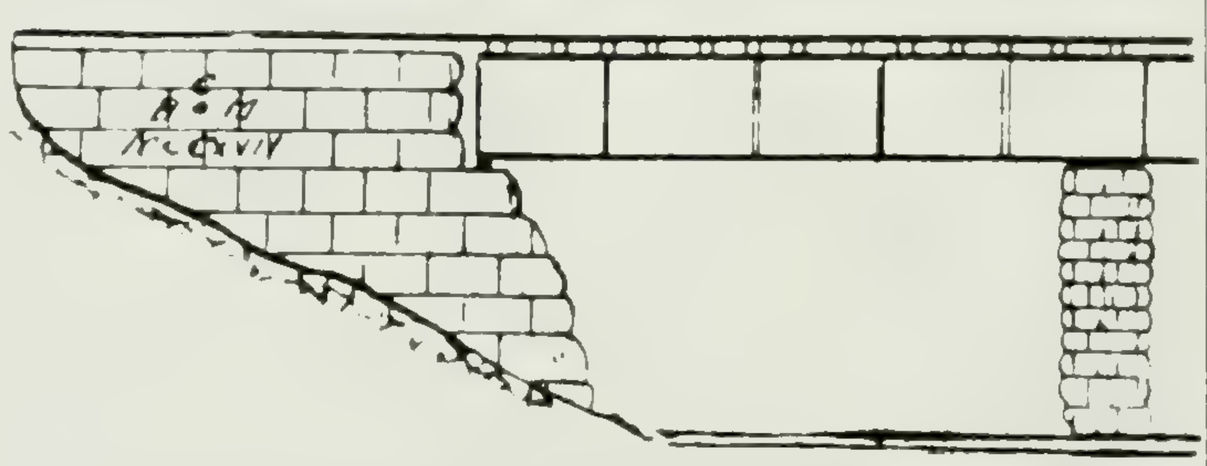
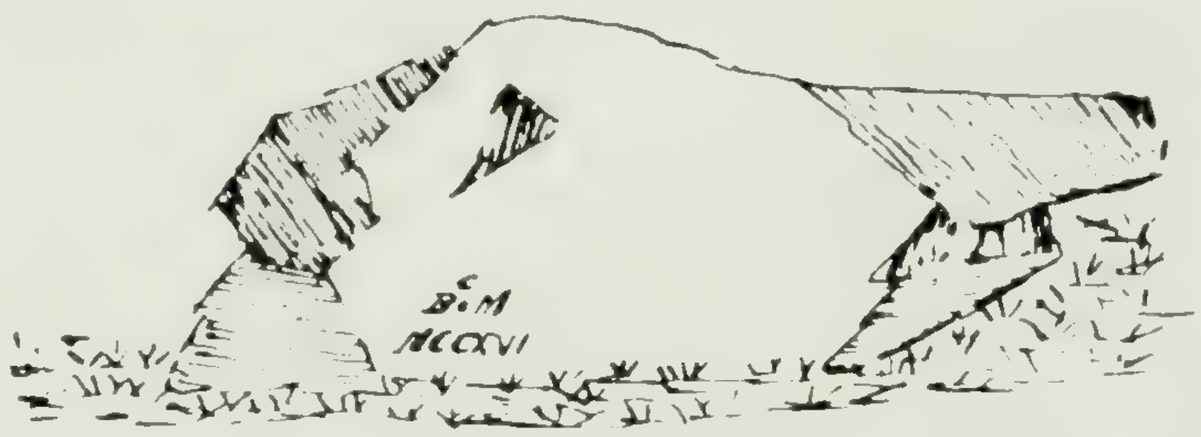
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C. B.⊖M. MCCIX	Chisel line on end of copper bolt driven horizontally in stone, 18 inches above ground, between 1st and 2nd window from front, S. wall of R.C. Church, Campbellford	29·46	531·33
	Base of G.T.R. rail at road crossing	29·31	518·02
	Base of G.T.R. rail over Street	29·73	494·53
			
C. B.⊖M. MCCX.	Chisel line on end of copper bolt driven horizontally into 2nd course from top S. face of E. abutment, of G.T.R. bridge over Trent river, Campbellford, Ont	29·82	489·88
	Base of G.T.R. rail, centre of bridge over Trent river	29·84	492·86
879	Copper bolt driven vertically into coping, in N.E. corner of N. end of W. abutment of G.T.R. bridge over the Trent river, Campbellford, Ont	29·87	493·08
	Base of G.T.R. rail at Street crossing	29·89	493·39
	Base of G.T.R. rail over brook	29·95	495·01
	Base of G.T.R. at Campbellford station	30·01	496·90
	Base of G.T.R. rail at Street crossing	30·03	497·71
	Base of G.T.R. rail over small brook	30·82	529·21
	Base of G.T.R. rail over small brook	31·23	546·04
880	Copper bolt driven vertically into concrete block, 66 ft. S. of G.T.R. E. side of brickyard crossing; one mile W. of Campbellford station	31·38	549·96
881	Copper bolt driven vertically into concrete block, 66 ft. S. of G.T.R. E. side of brickyard crossing; one mile W. of Campbellford station	31·40	550 89

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
	Base of G.T.R. rail at brickyard crossing	31·37	550·48
	Base of G.T.R. rail over small brook	31·39	550·96
	Base of G.T.R. rail over small brook	31·88	571·82
	Base of G.T.R. rail over small brook	32·11	572·84
	Base of G.T.R. rail over small brook	32·24	573·35
	Approximate bed of G.T.R.	32·47	574·91
	Base of G.T.R. rail at road crossing	33·38	581·11
	Base of G.T.R. rail at road crossing	33·76	589·06
	Approximate bed of G.T.R.	34·34	600·10
	Base of G.T.R. rail at road crossing	34·85	618·79
	Base of G.T.R. rail at post road crossing	35·24	630·07
	Approximate bed of G.T.R.	35·43	635·72
	Base of G.T.R. rail at road crossing	36·12	648·47
	Approximate bed of G.T.R.	36·29	648·36
	Base of G.T.R. rail at road crossing	36·97	644·08
	Approximate bed of G.T.R.	37·36	643·03
	Base of G.T.R. rail at road crossing	37·83	638·13
			
C. B.⊖M. MCCXX	Chisel line on end of copper bolt driven horizontally into N. face of large boulder, 36 feet S. of G.T.R. and 204 feet E. of mile-post 123-41	37·96	634·01
	Base of G.T.R. rail opposite B.M. MCCXX	37·96	633·74
	Approximate bed of G.T.R.	38·42	626·59
			
C. B.⊖M. MCCXIX	Cnisel line on end of copper bolt driven horizontally into S.W. face of large boulder, 166 feet N. of G.T.R. and 970 feet W. of mile-post 122·42	39·16	620·78
	Base of G.T.R. rail opposite B.M. MCCIX	39·16	620·98
	Approximate bed of G.T'R.	39·30	611·56
	Base of G.T.R. rail at Bridge St. crossing	40·25	619·22

DESCRIPTIVE List of most Important Permanent Bench Marks etc.—*Continued.*

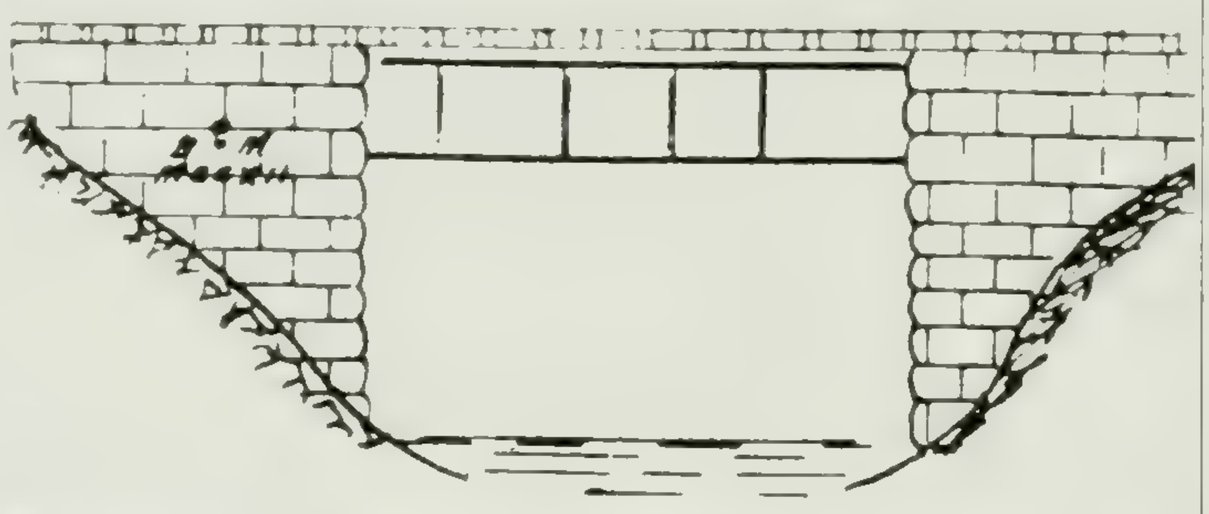
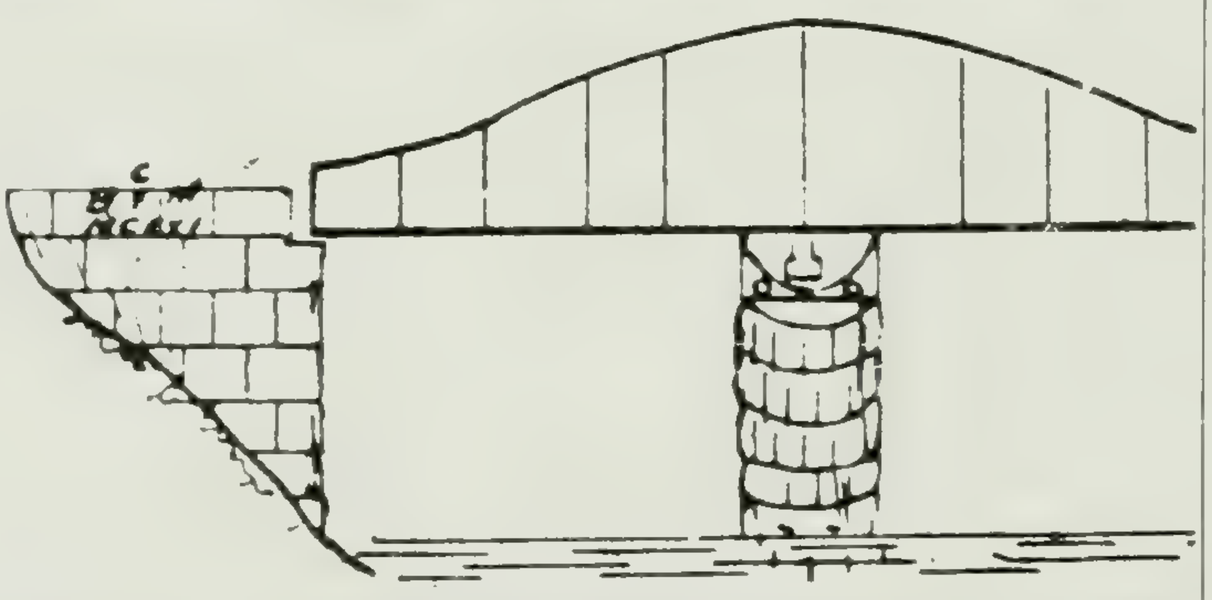
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
			
C. B.⊖M. MCCXVIII.	Chisel line on end of copper bolt driven horizontally into 3rd course from top, W. face of S. abutment of highway bridge over Trent river at Hastings, Ont.....	40·25	616·24
	Flooring-highway bridge, over Trent river, Hastings.....	40·29	621·06
878	+cut in coping, S.W. corner, Trent Canal lock, Hastings	40·33	615·92
	Base of G.T.R. rail at Hastings station.....	40·33	619·16
	Base of G.T.R. rail, centre of G.T.R. bridge over Trent river at Hastings, Ont.....	41·01	631·21
			
C. B.⊖M. MCCXVII.	Chisel line on end of copper bolt driven horizontally into 2nd course from top, S. face of W. abutment of G.T.R. bridge over Trent river, Hastings, Ont.....	41 06	629·14
	Approximate bed of G.T.R.....	41·33	626·05
	Approximate bed of G.T.R.....	42 45	621·05
			
C. B.⊖M. MCCXVI.	Copper bolt driven vertically into boulder, 14½ft. N. of G.T.R. and 207 feet W. of mile-post 118-46.....	43·00	635·08
	Base of G.T.R. rail opposite B.N. MCCXVI.....	43·00	634·11
	Base of G.T.R. rail at road crossing.....	43·07	634·41
	Base of G.T.R. rail at road crossing.....	43·96	624·42
	Approximate bed of G.T.R.....	44·35	618·74
	Base of G.T.R. tail at road crossing.....	44·93	622·22
	Base of G.T.R. rail at road crossing.....	45·17	618·95
	Base of G.T.R. over Ouse river.....	45·56	623·11
	Base of G.T.R. rail at Birdsall station.....	46·11	646·30
	Base of G.T.R. rail at Birdsall crossing.....	46·15	649·63
	Base of G.T.R. rail at road crossing.....	46·46	644·23
	Approximate bed of G.T.R.....	47·48	655·58
	Base of G.T.R. rail at road crossing.....	47·66	666·96

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued*

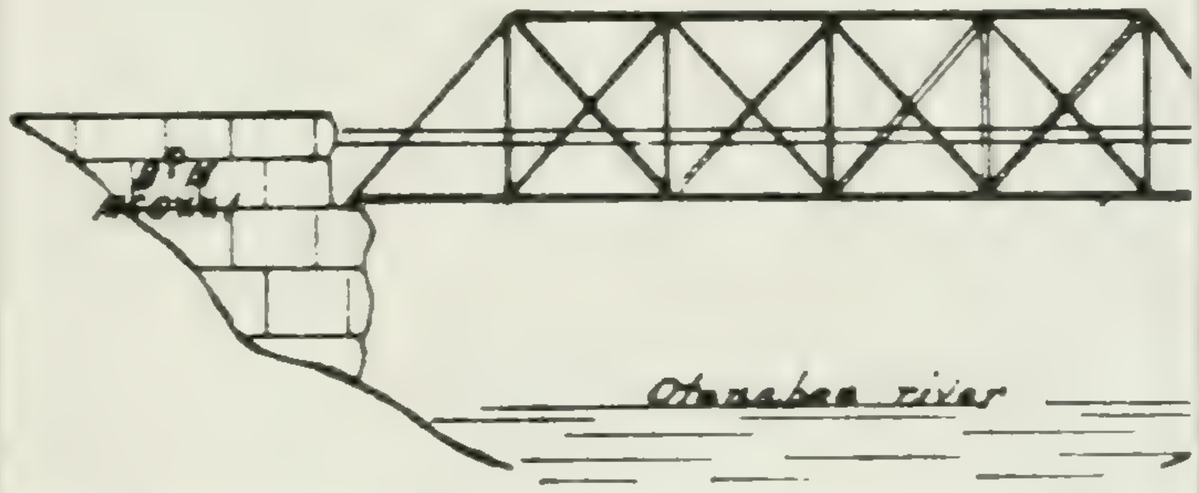
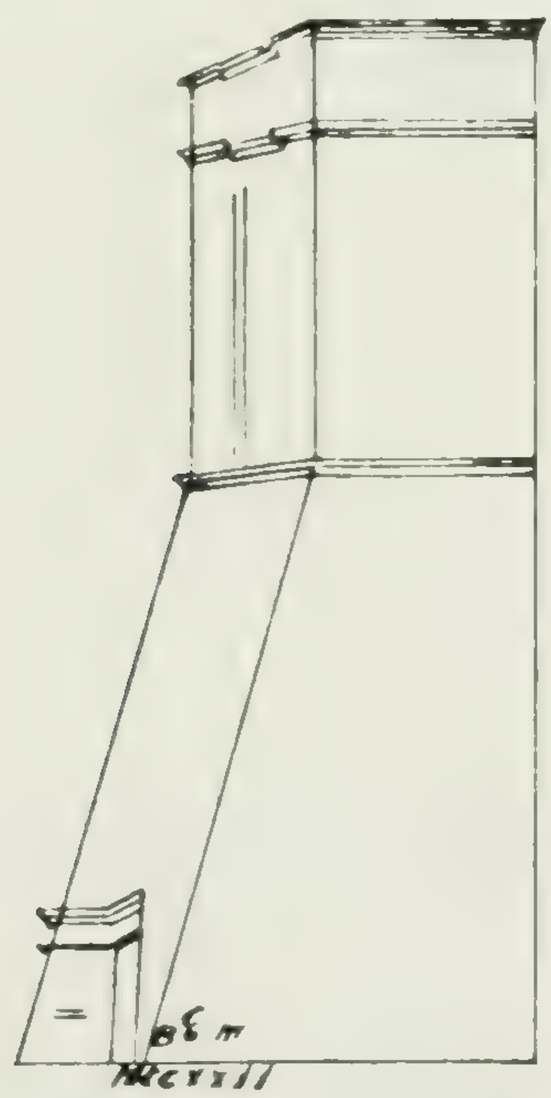
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
	Approximate bed of G.T.R.	48·38	697·41
	Base of G.T.R. rail at Blezard station	48·58	709·40
	Base of G.T.R. rail at Blezard crossing	48·61	711·53
			
C B.⊖M. MCCXV	Chisel line on end of copper bolt driven horizontally into E. face of large boulder, 17 feet S. of G.T.R. and 200 feet W. of Blezard station	48·62	714·91
	Base of G.T.R. rail opposite B.M.MCCXV	48·62	712·33
	Base of G.T.R. rail at road crossing	49·51	734·38
	Base of G.T.R. rail at road crossing	50·58	708·98
			
C B.⊖M. MCCXIV	Chisel line on end of copper bolt driven horizontally into N. face of large boulder, in N. fence line of G.T.R. and 614 feet E. of mile-post 110–54	50·87	684·13
	Base of G.T.R. rail opposite B.M.MCCXIV	50·87	691·45
	Base of G.T.R. rail at road crossing	51·51	672·11
	Base of G.T.R. rail over small brook	51·82	659·66
	Base of G.T.R. rail at road crossing	52·48	635·22
			
C B.⊖M. MCCXIII	Copper bolt driven vertically into bed rock, in fence line, N. side of G.T.R. 55 feet E. of brook, and 1000 feet E. of Keene's station	52·71	625·30
	Base of G.T.R. rail opposite B. M. MCCXIII	52·71	632·18
	Base of G.T.R. rail over small brook	52·73	632·53
	Base of G.T.R. rail at Keene station	52·91	634·12
	Base of G.T.R. rail over Indian river	53·01	635·50
	Base of G.T.R. rail at road crossing	53·32	652·86
	Base of G.T.R. rail at road crossing	54·30	697·02
	Approximate bed of G.T.R.	54·47	694·68
	Approximate bed of G.T.R.	55·48	703·78
	Base of G.T.R. rail at road crossing	56·09	693·58

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

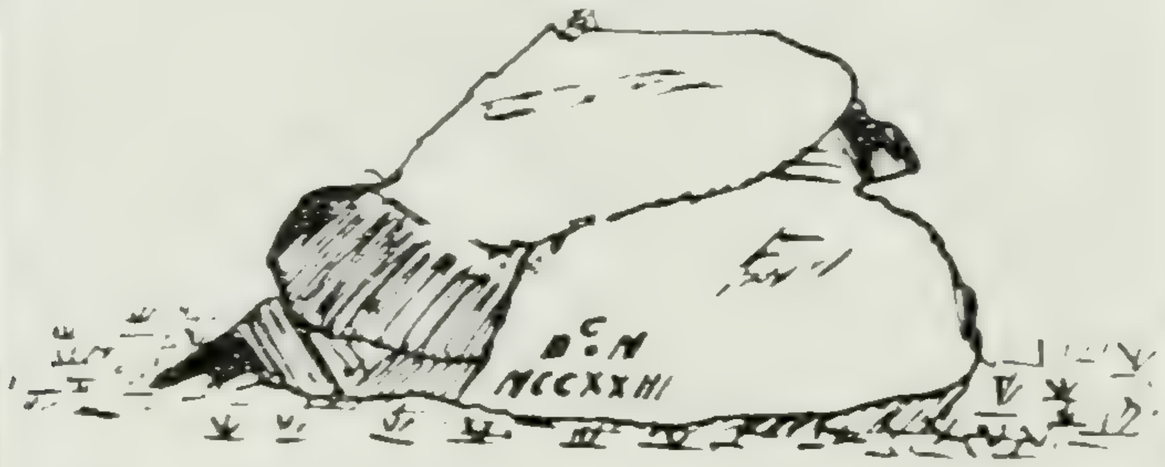
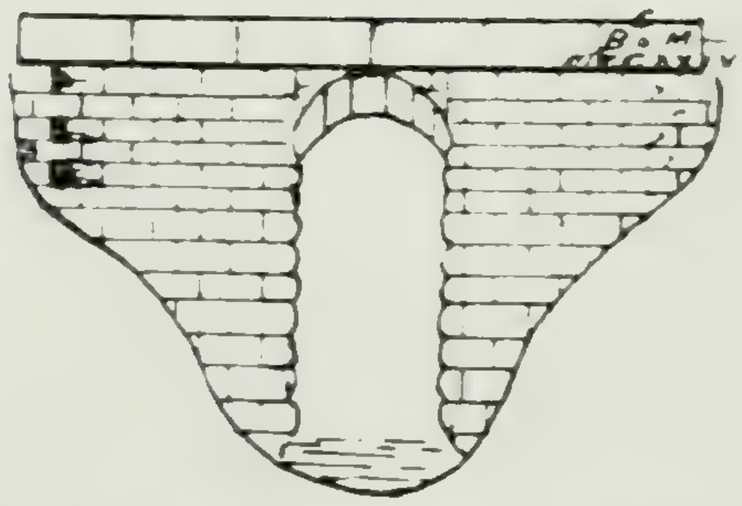
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
	Base of G.T.R. rail at Drummond's station	56·23	693·15
	Base of G.T.R. rail at Drummond's crossing	56·25	693·19
	Base of G.T.R. rail at road crossing	57·82	700·63
	Approximate bed of G.T.R.	58·48	691·47
	Base of G.T.R. rail at road crossing	58·70	691·26
	Base of G.T.R. rail at road crossing	59·06	682·96
	Approximate bed of G.T.R.	59·45	661·08
	Base of G.T.R. rail at Lakefield Junction	60·51	652·80
	Base of G.T.R. rail at road crossing	60·60	653·13
	Base of G.T.R. rail at road crossing	60·68	649·73
			
C B.⊖M. MCCXII	Chisel line on end of copper bolt driven horizontally into 4th course from top, S. face of W. abutement of G.T.R. bridge over E. branch of Otonabee river	60·90	632·99
	Base of G.T.R. rail over E. branch of Otonabee river	60·91	638·54
	Base of G.T.R. rail over W. Branch of Otonabee river	61·17	634·48
			
C B.○M. MCCXI	Copper bolt driven vertically into coping, S. end of W. abutment of G.T.R. bridge over W. branch of Otonabee river	61·18	634·59
	Base of G.T.R. rail at road crossing	61·23	634·31
	Base of G.T.R. rail at Brock St. crossing	61·61	628·10
	Base of G.T.R. rail at Romain St. crossing	61·75	629·33
	Base of G.T.R. rail at Westcott St. crossing	61·83	630·85
	Base of G.T.R. rail at Lake St. crossing	61·91	632·80
	Base of G.T.R. rail at Perry Aylmer Sts. crossing	61·99	633·62
	Base of G.T.R. rail at Street crossing	62·09	635·72
	Base of G.T.R. rail at crossing of C.P.R.	62·15	636·99
	Base of G.T.R. rail at Townsend St. crossing	62·18	637·21
	Base of G.T.R. rail at Wolf St. crossing	62·26	639·75
	Base of G.T.R. rail at Dalhousie St. Crossing	62·35	643·14
	Base of G.T.R. rail at Sherbrooke St. crossing	62·44	646·09
	BRANCH LINE TO PETERBOROUGH LIFT LOCK.		
	Base of Electric Ry. rail, corner of Sherbrooke street and George, Peterborough, Ont	62·67	635·19
	Base of C.P.R. rail, centre of bridge, over Otonabee River	62·93	632 69

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Descriptive List of most Important Permanent Bench Marks, etc.—*Continued.*

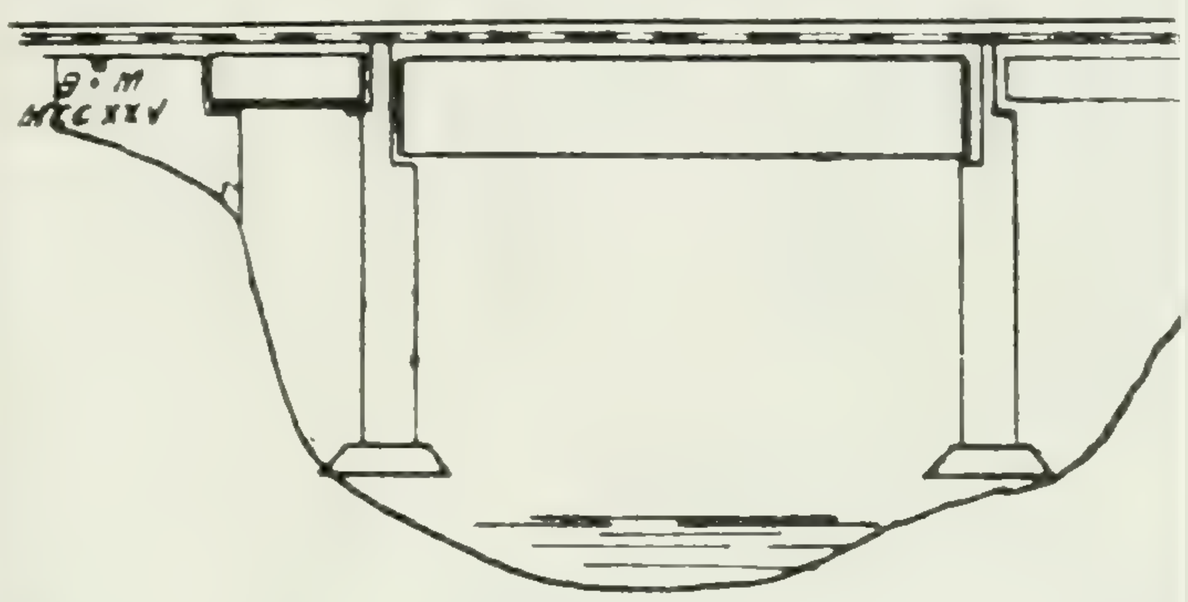
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C B.⊖M. MCCXXI	Chisel line on end of copper bolt driven horizontally into 2nd course from top, N. face of E. abutement of C.P.R. bridge over Otonabee river	62·95	632·03
	Base of C.P.R. rail under highway crossing	63·05	633·63
	Base of C.P.R. rail at road crossing	63·29	636·37
	Base of C.P.R. rai. at road crossing	63·50	640·74
	Baxe of C.P.R. rail at road crossing	63·58	640·83
	Coping, W. wall of Trent Canal, foot of Lift Lock	63·98	635·12
	Water Surface of Trent Canal, foot of Lift Lock	63·98	627·12
			
C B.⊖M. MCCXXII 877	Chisel line on end of copper bolt driven horizontally into base, S. face of W. tower of Lift Lock, Trent Canal Peterborough, Ont	63·98	637·17
	+Cut into granolithic pavement N. side of Sherbrooke St. and in line with W. side line of Bethune St	62·44	646·49
	Base of G.T.R. rail at King St. crossing	62·52	647·45
	Base of G.T.R. rail at Peterborough station	62·57	647·82
	Base of G.T.R. rail at Charlotte St. crossing	62·62	648·17
	Base of G.T.R. rail at Simcoe St. crossing	62·70	649·76
	Base of G.T.R. rail at Hunter St. crossing	62·78	651·71
	Base of G.T.R. rail at Brock St. crossing	62·87	653·91
	Base of G.T.R. rail over brook	63·01	658·38
	Base of G.T.R. rail at Reid St. crossing	63·11	662·88
	Base of G.T.R. rail at Donagall St. crossing	63·22	669·76
	Base of G.T.R. rail at Park St. crossing	63·31	676·33
	Base of G.T.R. rail at McDonald St. crossing	63·33	677·53
	Approximate bed of G.T.R	63·43	684·18

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

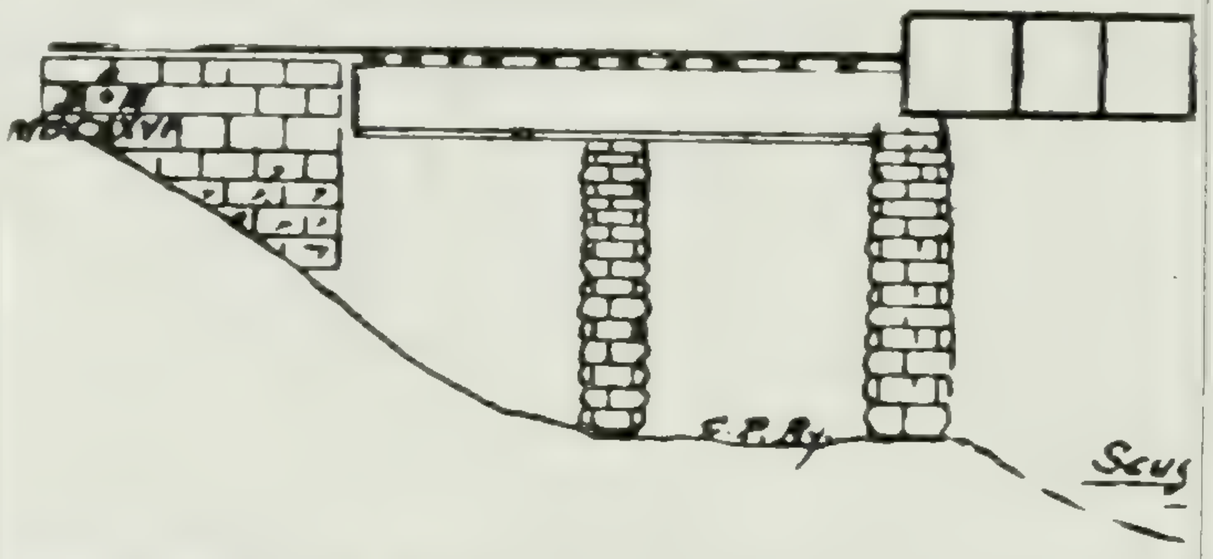
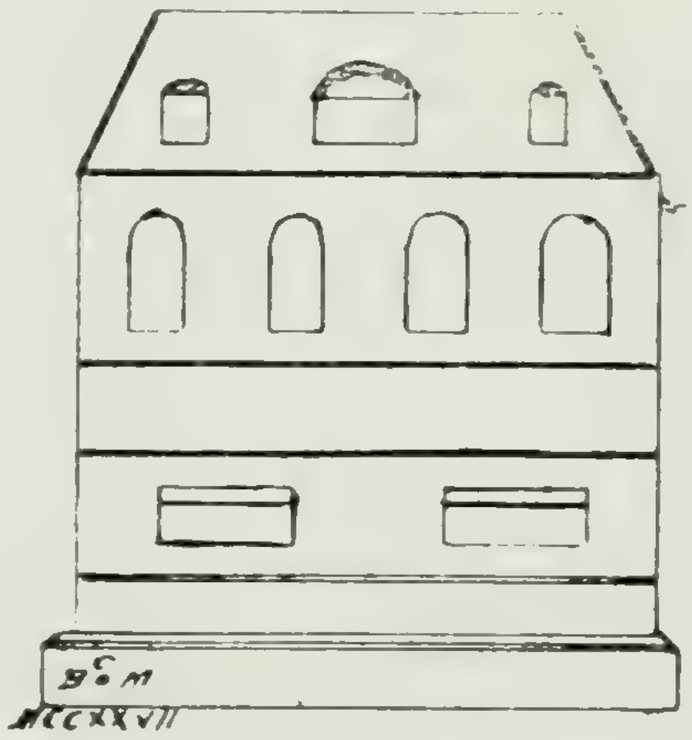
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
			
C B.⊖M. MCCXXIII	Chisel line on end of copper bolt driven horizontally into W. face of large boulder, 3½ feet N. of G.T.R. and 650 feet W. of mile-post 66½	63·62	695·33
	Base of G.T.R. rail opposite B.M. MCCXXIII	63·62	695·52
	Base of G.T.R. rail at road crossing	63·67	698·68
	Base of G.T.R. rail at park road crossing	63·93	714·73
	Base of G.T.R. rail over small brook	64·61	752·38
	Base of G.T.R. rail over small brook	65·11	769·21
	Approximate bed of G.T.R.	65·46	779·77
	Base of G.T.R. rail over small brook	65·73	783·55
	Base of G.T.R. rail at road crossing	66·48	787·37
	Approximate bed of G.T.R.	67·60	811·21
	Base of G.T.R. rail at road crossing	67·76	821·75
			
C B.⊖M. MCCXXIV	Chisel line on end of copper bolt driven horizontally into top course, E. end of S. face of G.T.R. culvert, at mile-post 71·93	67·99	806·19
	Base of G.T.R. rail opposite B.M. MCCXXIV	67·99	835·60
	Approximate bed of G.T.R.	68·53	872·47
	Base of G.T.R. rail at Best's crossing	68·73	883·79
	Base of G.T.R. rail at Best's station	68·75	885·00
	Approximate bed of G.T.R.	69·53	914·20
	Base of G.T.R. rail at road crossing	70·48	931·56
	Base of G.T.R. rail at road crossing	70·79	917·48
	Base of G.T.R. rail under highway crossing	71·23	898·37

SESSIONAL PAPER No. 19

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

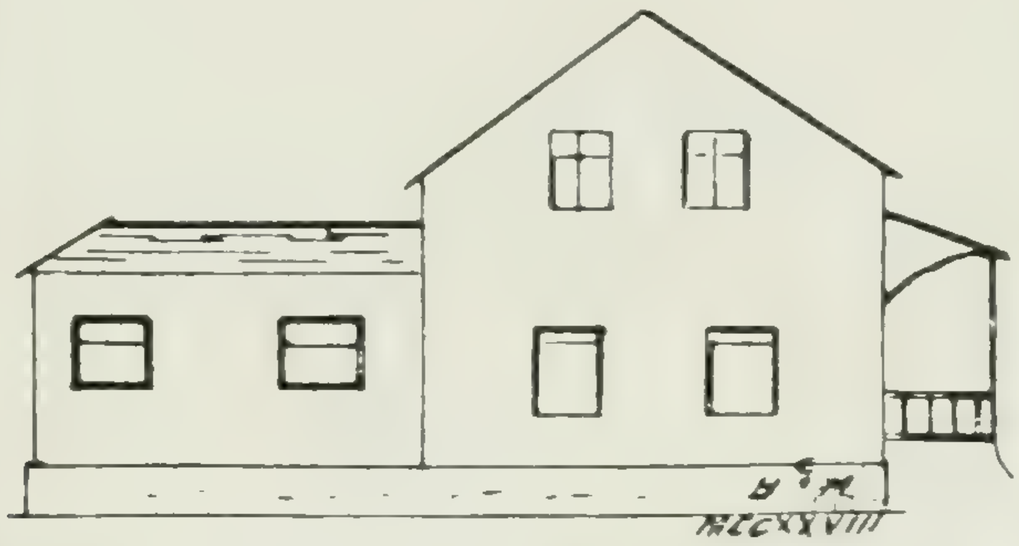
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal, Trenton, Ont.	Feet above mean Sea Level.
			
C B.⊖M. MCCXXV	Chisel line on end of copper bolt driven horizontally into N. face of E. abutment of G.T.R. bridge over small stream, foot of deep gully, at mile-post 74½	71·47	888·20
	Base of G.T.R. rail, centre of G.T.R. bridge over small stream, at mile-post 74½ from Belleville	71·52	894·31
	Base of G.T.R. rail under highway crossing	71·99	916·21
	Approximate bed of G.T.R	72·38	913·21
	Base of G.T.R. rail at road crossing	72·92	885·93
	Base of G.T.R. rail at road crossing	73·45	880·85
	Approximate bed of G.T.R	73·53	879·78
	Base of G.T.R. rail at road crossing	74·27	869·87
	Approximate bed of G.T.R	74·58	855·65
	Approximate bed of G.T.R	75·41	817·58
	Base of G.T.R. rail over Pigeon creek	75·65	823·77
	Base of G.T.R. rail at road crossing	75·72	826·26
	Base of G.T.R. rail at Omemee village station	75·91	831·54
	Approximate bed of G.T.R	76·46	847·92
	Base of G.T.R. rail at road crossing	76·63	854 34
	Base of G.T.R. at Omemee Jct. station	76·74	855·67
	Approximate bed of G.T.R...—	77·46	882·04
	Base of G.T.R. rail at road crossing	77·85	869·55
	Base of G.T.R. rail at road crossing	78·36	867·19
	Base of G.T.R. rail ar road crossing	79·12	871·76
	Base of G.T.R. rail at road crossing	80·05	855·95
	Base of G.T.R. rail at Reaboro station	80·21	850·46
	Base of G.T.R. rail at Reaboro crossing	80·25	849·95
	Base of G.T.R. rail at road crossing	81·03	863·71
	Base of G.T.R. rail at road crossing	81·58	866·46
	Approximate bed of G.T.R	82·51	873·24
	Base of G.T.R. rail at road crossing	82·83	878·98
	Base of G.T.R. rail at road crossing	82·90	882·18
	Approximate bed of G.T.R	83·47	881·85
	Base of G.T.R. rail at road crossing	84·21	875·06
	Approximate bed of G.T.R	84·45	872·65
	Base of G.T.R. rail over street, Lindsay, Ont	84·79	859·05

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

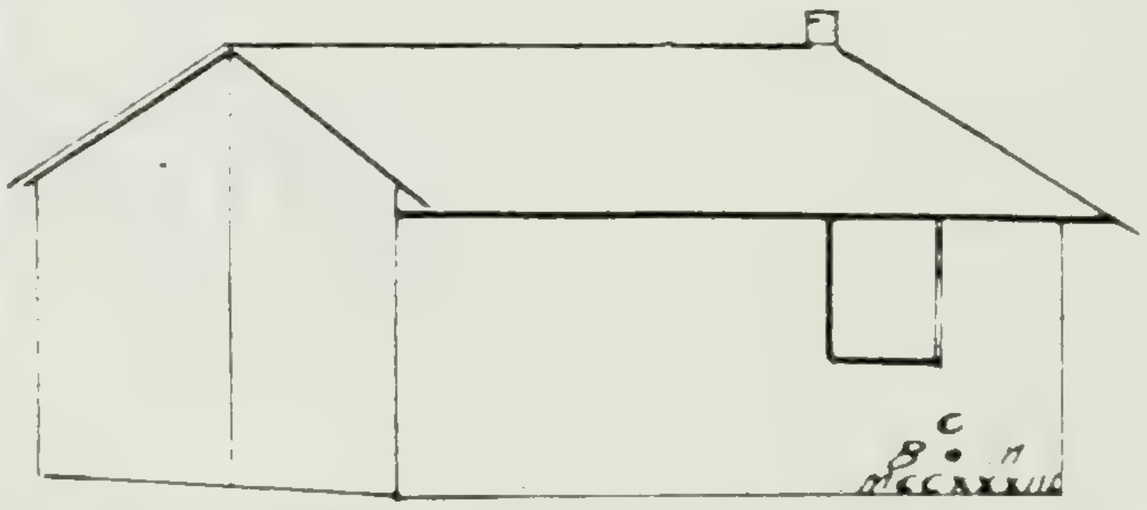
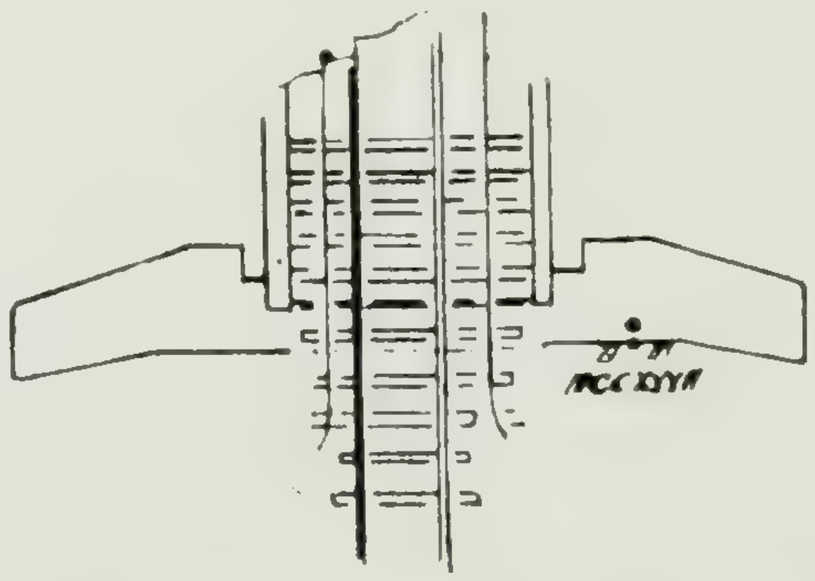
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C B–M MCCXXVI 882	Chisel line on end of copper bolt driven horizontally into 4th course from top, N. face of E. abutment of G.T.R. bridge over Scugog river, Lindsay, Ont	84·83	855·18
	Copper bolt driven vertically into coping, N. end of E. abutment of G.T.R. bridge over Scugog river, Lindsay	84·83	858·27
	Base of G.T.R. rail over C.P.R	84·84	858·10
	Base of G.T.R. rail over Scugog river	84·85	857·87
	Base of G.T.R. rail at Street crossing	85·00	854·57
	Base of G.T.R. rail at Street crossing	85·09	854·03
	Base of G.T.R. rail at Street crossing	85·18	854·09
	Base of G.T.R. rail at Street crossing	85·26	853·86
	Base of G.T.R. rail at Lindsay station	85·40	852·88
			
C B.⊖M. MCCXXVII	Chisel line on end of copper bolt driven horizontally into 1st cut stone above ground, N.W. corner of Post Office building at Lindsay, Ont	85·91	855·80
	Base of G.T.R. rail at Street crossing	85·51	852·85
	Base of G.T.R. rail at Street crossing	85·58	852·91
	Base of G.T.R. rail at road crossing	85·82	856·87
	Base of G.T.R. rail at road crossing	85·99	868·41
	Base of G.T.R. rail at road crossing	86·16	880·41
	Approximate bed of G.T.R	86·42	894·32
	Base of G.T.R. rail at road crossing	87·14	888·39
	Base of G.T.R. rail at road crossing	87·21	887·37
	Approximate bed of G.T.R	87·40	883·83
	Base of G.T.R. rail at road crossing	87·94	885·76
	Base of G.T.R. rail at road crossing	88·32	884·17
	Approximate bed of G.T.R	89·39	910·92
	Base of G.T.R. rail under highway crossing	89·41	911·05
	Base of G.T.R. rail under highway crossing	89·70	897·14
	Base of G.T.R. rail over road crossing	90·07	878·72
	Approx mate bed of G.T.R	90·32	866·93

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C B.—M. MCCXXVIII	Chisel line on end of copper bolt driven horizontally into stone foundation, N.W. corner of Mr. Fuller's wooden cottage opposite Cambray station	91·20	872·46
	Base of G.T.R. rail opposite B.M. MCCXXVIII	91·20	870·70
	Base of G.T.R. rail at Cambray station	91·22	870·32
	Base of G.T.R. rail at Cambray crossing	91·23	870·17
	Approximate bed of G.T.R.	91·45	869·44
	Base of G.T.R. rail at road crossing	91·53	870·23
	Approximate bed of G.T.R.	92·59	907·78
	Base of G.T.R. rail at road crossing	92·73	909·56
	Base of G.T.R. rail at road crossing	92·96	909·95
	Approximate bed of G.T.R.	93·54	892·53
883	Brass-headed nail on coping timber, centre of S. end of wooden culvert, 80 feet E. of mile-post 97½	94·07	902·91
884	Brass-headed nail on coping timber, centre of S. end of wooden culvert, 80 feet E. of mile post 97½	94·07	902·94
	Base of G.T.R. rail opposite B.M. 884	94·07	907·22
	Base of G.T.R. rail at road crossing	95·10	907·12
	Base of G.T.R. rail at road crossing	95·28	928·18
	Base of G.T.R. rail at road crossing	95·70	926·90
			
C B.⊖M. MCCXXXIV	Chisel line on end of copper bolt driven horizontally into S. face of rock, 13½ feet S. of G.T.R. and 790 feet W. of mile-post 95-99	95·73	925·29
	Base of G.T.R. rail opposite B.M. MCCXXXIV	95·73	925·63
	Base of G.T.R. rail at Grass Hill station	96·51	948·51
	Base of G.T.R. rail at Grass Hill crossing	96·57	947·69
	Approximate bed of G.T.R.	96·58	947·96
	Base of G.T.R. rail at road crossing (summit)	97·36	967·78
	Approximate bed of G.T.R.	97·53	962·34
	Base of G.T.R. rail at road crossing	98·35	939·41
	Approximate bed of G.T.R.	98·54	945·91
	Base of G.T.R. rail at road crossing	99·34	926·03
	Approximate bed of G.T.R.	99·58	919·28
	Base of G.T.R. rail at road crossing	100·30	898·03

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

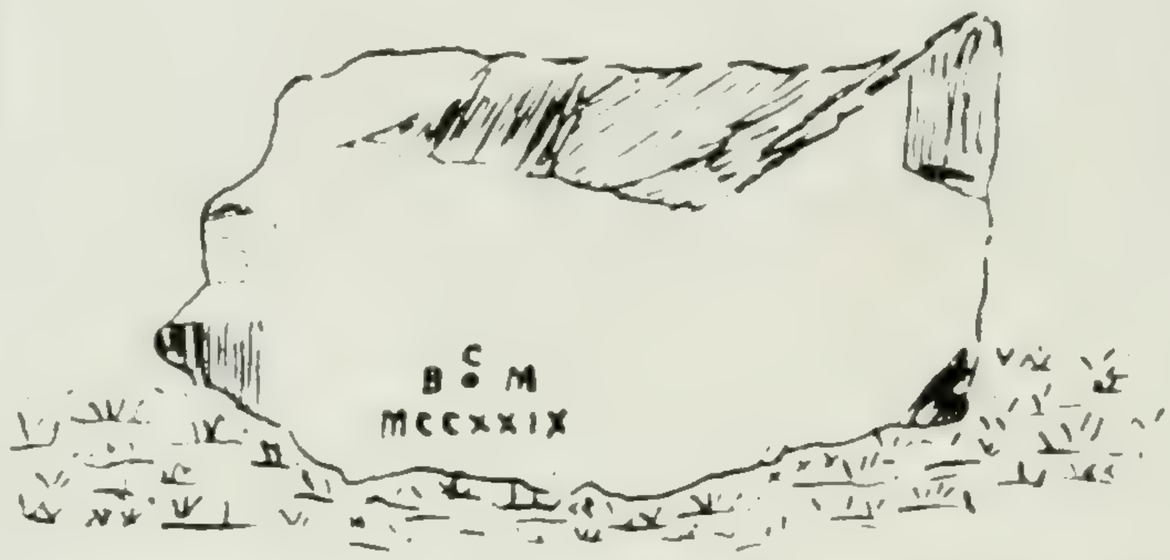
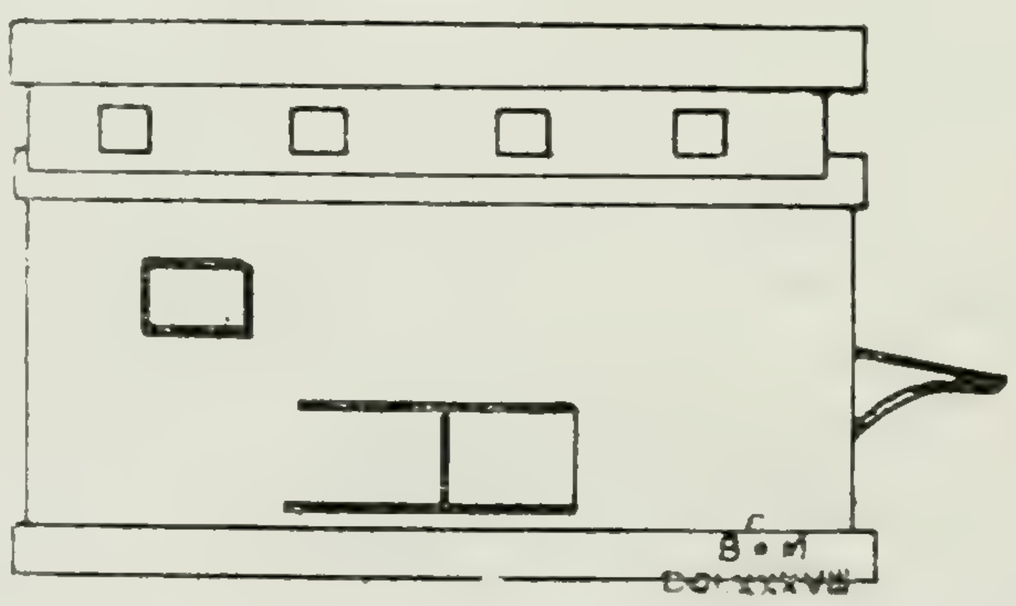
Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
C B.⊖M. MCCXXXIII	Chisel line on end of copper bolt driven horizontally into stone foundation, W. wall of brick oil house, N. side of G.T.R. and 320 ft. E. of Lorneville Jet. diamond	100·40	893·56
	Base of G.T.R. rail opposite B.M. MCCXXXIII	100·40	892·76
	Base of G.T.R. rail at Lorneville Jct. station	100·46	889·40
	Approximate bed of G.T.R.	100·55	885·06
	Base of G.T.R. rail at road crossing	101·18	880·27
	Approximate bed of G.T.R.	101·56	880·27
	Base of G.T.R. rail under highway crossing	102·04	869·51
	Base of G.T.R. rail at road crossing	102·96	832·37
	Approximate bed of G.T.R.	103·48	825·61
	Base of G.T.R. rail under highway crossing	103·59	822·69
	Base of G.T.R. rail at road crossing	104·12	808·69
	Base of G.T.R. rail at road crossing	104·35	801·83
	Approximate bed of G.T.R.	104·53	797·28
	Approximate bed of G.T.R.	105·51	793·90
	Base of G.T.R. rail at road crossing	105·87	790·96
	Approximate bed of G.T.R.	106·55	782·53
	Base of G.T.R. rail at road crossing	106·62	782·55
	Approximate bed of G.T.R.	107·55	771·15
	Base of G.T.R. rail at road crossing	107·69	766·92
	Base of G.T.R. rail at Beaverton station	107·93	760·50
	Base of G.T.R. rail at Beaverton crossing	107·97	759·39
	Approximate bed of G.T.R.	108·51	750·75
	Base of G.T.R. rail over brook	108·53	750·31
	Base of G.T.R. rail at road crossing	108·59	749·85
	Approximate bed of G.T.R.	109·52	737·98
	Base of G.T.R. rail at road crossing	110·38	726·06
	Approximate bed of G.T.R.	110·51	730·41
	Base of G.T.R. rail over Talbot river	110·76	740·29
	Base of G.T.R. rail over Trent Canal, Gamebridge	110·98	746·93
	Water surface of Trent Canal, or Lake Simcoe, on November 23rd, 1908	110·98	717·53
886	+ Cut on coping, E. end of N. abutment of G.T.R. bridge over Trent Canal at Gamebridge, Ont	110·99	746·95
			
C B.⊖M. MCCXXXII	Chisel line on end of copper bolt driven horizontally into N. face of concrete guard wall, E. end of S. abutment of G.T.R. overhead crossing of C.N.R. at Gamebridge	111·17	748·20

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DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Continued.*

Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
	Base of G.T.R rail over C.N.R.	111·17	749·73
	Base of C.N. Ry. rail under G.T.R.	111·17	725·32
	Base of G.T.R. rail at road crossing.	111·49	749·90
	Base of G.T.R. rail at Gamebridge crossing	112·38	801·06
	Base of G.T.R. rail at Gamebridge station	112·39	800·65
			
C B.⊖M. MCCXXXI	Chizel line on end of copper bolt driven horizontally into N. face of large boulder, 45 feet W. of G.T.R. and 100 feet N. of Gambridge station.		
	Base of G.T.R. rail opposite B.M. MCCXXXI	112·41	799·85
	Approximate bed of G.T.R.	112·54	796·57
	Base of G.T.R. rail at road crossing	113·23	789·74
	Approximate bed of G.T.R	113·52	779·28
	Base of G.T.R. rail at road crossing	114·09	760·52
	Approximate bed of G.T.R.	114·55	763·08
	Base of G.T.R. rail at road crossing.	114·92	752·65
	Approximate bed of G.T.R.	115·55	749·92
	Base of G.T.R. rail at Brechen crossing	115·77	745·45
	Base of G.T.R. rail at Brechen station	115·81	744·71
			
C B.⊖M. MCCXXX	Chisel line on end of copper bolt driven horizontally into S. face of large boulder, 3 ft. E. of G.T.R. and 675 feet N. of Brechen station	115·94	738·72
	Base of G.T.R. rail opposite B.M. MCCXXX	115·94	741·37
	Approximate bed of G.T.R.	116·47	725·36
	Approximate bed of G.T.R.	117·47	723·19
	Approximate bed of G.T.R.	118·39	725·69
	Base of G.T.R. rail at Schepeler crossing	118·95	729·64
	Base of the G.T.R. rail at Schepeler station	118·98	729·66

DESCRIPTIVE List of most Important Permanent Bench Marks, etc.—*Concluded.*

Bench Marks.	Descriptions.	Miles from B.M. MCXC on C.O.R. bridge over Murray Canal Trenton, Ont.	Feet above mean Sea Level.
			
B.⊖M. MCCXXIX	Chisel line on end of copper bolt driven horizontally into large boulder in Mr. Boyles field, 85 feet S.E. of G.T.R and 1020 ft. S.E. of mile-post 41-123	119·33	734·08
	Base of G.T.R. rail oppossite B. M. MCCXXIX	119·33	732·31
	Approximate bed of G.T.R.	119·53	730·99
	Approximate bed of G.T R.	120·45	728·17
	Base of the G.T.R. rail at road crossing	120·86	729·16
885	+ Cut in rock, 8½ ft. N. of G.T.R. 830 ft. W. of mile-post 39½	121·16	732·58
	Base of G.T.R. rail opposite B. M. 885	121·16	732·65
	Base of G.T.R. rail at road crossing	121·32	729·14
	Approximate bed of G.T.R.	121·49	728·90
	Base of G.T.R. rail at road crossing	122·43	727·34
	Approximate bed of G.T.R.	122·52	729·76
	Base of G.T.R. rail at Uptergrove crossing	123·18	735·26
	Base of G.T.R. rail at Uptergrove station	123·23	735·85
	Base of G.T.R. rail at road crossing	123·54	736·48
	Base of G.T.R. rail at road crossing	124·53	741·40
	Base of G.T.R. rail at Longford road crossing	125·58	732·23
674	Base of the G.T.R. rail at Atherly Jct. station	125·69	727·04
	+ Cut on S.E. cor of concrete turntable under Atherly highway bridge	125·50	721·92
	Water surface of Lake Simcoe, November 18th, 1908	125·50	717·52
	Approximate bed of G.T.R.	126·49	725·89
673	Brass-headed nail on W. end of wooden culvert, 450 ft. N. of Orilia Station	127·80	721·40
672	Brass-headed nail on W. end of wooden culvert, 450 ft. N. of Orillia station	127·80	722·40
			
C B.⊖M. DCLXXXVIII	Chisel line on end of copper bolt driven horizontally into E side of foundation, at N.E. corner of Geo. Vicks grist mill and elevator, foot of Tecumseh St., Orillia	128·52	731·05